THE IRON TRADE REVIEW

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READY TO BUY.

STEEL CORPORATION OFFICIALS SOUNDED CONCERNING BESSEMER PURCHASE.

Slight Difference of Views on Price—Order for New Vessels Expected—General Situation Strong.

Although the volume of new business entered during the past week has not been as large as in some previous weeks, conditions continue sound and mills are taxed to their utmost capacity, especially on building materials and rails.

Negotiating for Bessemer.

The most interesting development of the pig iron market was the holding of informal conferences by representatives of the Bessemer Association with United States Steel Corporation officials concerning the purchase of Bessemer iron for September delivery. The corporation is now using its surplus iron at the rate of 20,000 tons per day and officials agree that it will soon be necessary to make a purchase. It is understood that there is a slight difference of opinion on the part of corporation officials and makers of Bessemer as to the price which should be paid, but it is not thought that there will be any serious difficulty in reaching an agreement, and it is probable that the purchase of about 40,000 tons will be announced before the first of September. The market for Bessemer and basic is showing greater strength, which sellers believe will be maintained even if the corporation shall not make the expected purchase. Basic is especially strong as indicated by reports from numerous manufacturing centers. The usual quotation for basic. Bessemer and No. 2 Foundry is $14.50 at Ohio Valley furnaces. The Southern pig iron market shows little change except that the makers seem to have more difficulty in disposing of the lower grades, gray forge being sold at $10.25, Birmingham. In Ohio, quotations at Southern Ohio furnaces are about 50 cents lower than in other parts of the State. There is still complaint of car shortage in the South, but it has been relieved to a considerable extent. Some buyers are showing a disposition to contract for the first quarter of next year and while a few sellers are willing to sell for that period at present prices, others decline to do so.

Hard to Give Delivery.

The question constantly confronting manufacturers of nearly all kinds of material is how to give delivery to satisfy buyers. The situation in regard to structural shapes is such that building operations are being delayed much more by congestion at the mills than by the strike of the structural iron workers. Some building operations will probably be abandoned for the year. but users of structural material are already making their arrangements to cover for their requirements next year, which promises to be a very busy season in new construction.

More orders for Vessels.

In addition to the orders placed last week for a large car ferry and two large steel freighters, it is expected that within a few days contracts will be let for the construction of five more huge freighters. The outlook is that the demand for plates for ship building and other interests will keep the mills busy, giving them all they can possibly do to make delivery in accordance with the contracts.

Pipe Prices Are Revised.

The cutting of prices on merchant pipe continues. The announced rates of the leading producer have been reduced, but the changes do not attract much attention on account of the liberal concessions which have recently been made. The demand for sheets is improving in some markets, as low prices have stimulated business. Bar iron continues to show much strength. and Eastern manufacturers have reaffirmed prices.

Scrap Prices Are Advancing.

There is a good demand for coke and prices are growing stronger. Prices of old material are gradually advancing and buying is more liberal, although not as brisk as dealers would like to see.

Large Sales of Steel Rails.

The principal sales of steel rails for the week were as follows: Harriman lines, 75,000 tons; Santa Fe, 12,000; Detroit, Toledo & Ironton, 10,000; St. Paul, 3,000; Great Northern, 5,000; Indianapolis & Cincinnati traction, 5,000; miscellaneous, 25,000; total, 135,000. The Harriman lines only recently had purchased 20,000 tons.

Ore Still Being Sold.

Although the sales of ore early in the season were unprecedentedly large, inquiry still continues and it is evident that quite a large number of furnaces have not fully provided for their requirements. One Cleveland agency this week disposed of 30,000 tons. Shipments are not being made as rapidly this month as they were in July, owing to heavy rains which interfere with the operations of mines. Ore is, however, being received at lower lake ports in such large amounts that a considerable tonnage is being placed on the docks.

THE WEEK IN IRON CENTERS.

PITTSBURG.

No Weak Places in the Market, but Demand for Pig Iron not Brisk.

OFFICE OF *The Iron Trade Review*,
521 PARK BUILDING, August 23.

The condition on the iron and steel market in this district this week is strong, in fact, there does not seem to be a weak spot in it. Comparatively speaking, but little business was done in the pig iron market, but prices are firm and the feeling is good, with the possibilities in favor of an advance in prices before another week has passed. One thousand tons of standard Bessemer was sold at $14.50, furnace, for immediate delivery, and negotiations for 3,000 tons more are pending and will be closed tomorrow at the same figure. So strong is the feeling in pig iron producing circles that some of them are not quoting beyond September delivery and others will not quote beyond October. There is but very little speculation, consumers buying only for their requirements. The report that the United States Steel Corporation is going to buy has had a great deal to do with the stiffening in prices, and it is probable the deal will be closed before the end of the week.

Inquiries for iron have increased, but aside from the sales already noticed but little business has been done. There has been considerable inquiry for low phosphorus iron, and $21.50 is quoted. Southern iron is quoted at $11.75, Birmingham, but this could probably be shaded a trifle on a desirable order.

The scarcity of billets and bars has assumed such shape that during the past week there has been considerable talk of the necessity to import, although this will be discouraged by home producers if there is any possible way to do it. It is reported that some importations have already been made along the coast. Heavy tonnage continues to be booked for structural material and rails, and in the latter commodity there has been a marked activity during the past week, several large orders having been booked. The structural and rail mills are running to capacity. There has been a considerable activity in shipbuilding material, and there are still further inquiries being made, although it is understood the lake yards are practically full for 1906 delivery.

Pig Iron.—The market is strong at $14.50, Valley, for Bessemer for prompt delivery, with inquiries good. The sale of 1,000 tons at $14.50 is noted and a deal involving 3,000 tons will be closed before the end of the week. It is doubtful if any could be bought at a lower figure, and an advance is expected during the coming week. The Steel Corporation's deal, mentioned in these reports heretofore, will probably be closed before the end of the week. We revise quotations as follows:

Bessemer, Valley	$14.50 to $14.75
Bessemer, Pittsburg	15.35 to 15.60
No. 1 Foundry	15.85 to 16.10
No. 2 Foundry	15.35 to 15.60
Gray Forge, Pittsburg	14.50 to 14.80
Basic, Valley	14.50 to 14.75
Basic, Pittsburg	15.35 to 15.60

Steel.—Billets and bars are scarce and there is a heavy demand. The scarcity is accounted for by the fact that a majority of the bar mills are running on structural material. Bars, long lengths, are quoted at $25, although some producers are asking $26, and cut bars at an advance of 50c. Bessemer billets are quoted at $24 and open hearth at $25.50, with very little to be had at that price. The tendency has been to advance.

Ferro-Manganese.—Ferro-manganese 80 percent has taken a decided jump within the past week, and quotations of $49 and under were hurridly withdrawn early in the week and some business has been done during the past few days at $50 to $51.50, Pittsburg. One sale of a small quantity for immediate delivery was made at $54, but this was under exceptional conditions. There is apparently a scarcity of this product, as the advance has been general.

Muck Bar.—There has been such small sales of muck bar that it is difficult to quote a price, but it is about $26.20, Youngstown, or $27.15, Pittsburg.

Skelp.—The market continues quiet and very little is being done in skelp. Bessemer grooved is quoted at 1.50c and sheared at 1.55c. Grooved iron is quoted at 1.55c and sheared at 1.60c to 1.65c.

Rails and Track Material.—The increased demand for light rails and the fact that but few of the mills are making them is accountable for the scarcity and the increasing prices. Most of the mills are running light structural shapes in the bar mills where the rails are usually made. On heavy sections the mills are running to capacity, and several large orders were placed during the past week. We quote:

Fifty pounds and 500 tons, $28; carload lots and less than 500 tons, $30; less than carload lots, $32; light rails, 16-lb., $29 to $30; 20-lb. $27.50 to $28; 25 to 45-lb., $26 to $29; angle bars for standard sections, 1.35c; spikes, 1.75c.

Plates.—Plates are still strong in the market and the tonnage placed within the past week is greater than the week before. The contracts for three boats, of the coarse freight type on the lakes within the past two weeks accounts for a considerable tonnage of ship plates, and there is still some inquiry from the lake shipyards. There has been not a little difficulty in making deliveries, and this will continue for some time to come. We quote:

Tank plates, ¼ in. thick, 6¼ in. to 14., inclusive, 1.50c f. o. b. mill Pittsburg; over 14 in. up to 100 in., 1.60c. Extras are as follows per 100 lb.: Flange and boiler steel 10c; marine, A. B. M. A., and ordinary fire box, 20c; still bottom, 30c; locomotive fire box, 50c; plates over 100 in. up to 110 in. in width, not less than 5c extra; plates 110 in. to 115 in. wide, not less than 10c extra; 115 to 120 in., 15c extra; plates 120 in. to 125 in. wide, not less than 25c extra; plates 125 in. to 130 in., not less than 50c extra; plates 130 in. wide, not less than $1 extra; plates 3-16 in. thick, 10c extra; gauges 7 and 8, 15c extra; No. 9, 25c extra. Five cents extra for less than carloads. Terms net cash in 30 days, and for all points of delivery in the United States except Pacific Coast.

Bars.—The situation is very satisfactory and orders have shown an increasing demand. Bar iron continues at 1.60c to 1.65c., Pittsburg. We quote:

Bar iron 1.60c to 1.65c, Pittsburg; hoops, 1.65c and bands 1.50c; both taking hoops and bands extras, respectively. Bessemer steel bars, 1.50c; open hearth steel bars, 1.50c; plow and cultivator, 1.50c, net; channels, angles, zees and tees, under 3 in., 1.60c. The following differentials are maintained on steel: Less than 2,000 lb. 10 cents advance; less than 1,000 lb. of a size 30 cents advance.

Structural Material.—Contracts for structural material continue to be booked, although no big contracts have been placed within the past weeks. Local structural manufacturers are practically out of the market for several months to come, and the tonnage for the year will be greater than during any previous year. Some manufacturers cannot take further business for 1905 delivery.

We quote as follows: Beams and channels up to 15 in., 1.60c; over 15 in., 1.70c; zees, 1.60c; tees, 1.65c; angles, from 3 to 6 in. inclusive, 1.60c; universal and sheared plates, 6¼ to 14 in., inclusive, 1.50c; over 14 in., 1.60c, base.

Sheets.—The condition of this market has shown considerable improvement, although it is not what may be expected by any means for next month. The Greer plant of the American Sheet & Tin Plate Co., at New Castle, started this week with 20 mills, and three mills of the Cambridge plant have been started. There is no foundation for the report that the Struthers plant is to be started in the immediate future. We quote:

No. 30, 2.65c; No. 29, 2.55c; No. 28, 2.40c; No. 27, 2.30c; Nos. 25-26, 2.25c; Nos. 22-24, 2.20c; Nos. 17-21, 2.15c; Nos. 15-16, 2.10c; Nos. 13-14, 2.05c; Nos. 10-12, 2c. Galvanized, Nos. 10-11, 2.35c; Nos. 12-14, 2.45c; Nos. 15-16, 2.55c; Nos. 17-21, 2.70c; Nos. 22-24, 2.85c; Nos. 25-26, 3.05c; No. 27, 3.25c; No. 28, 3.45c; No. 29, 3.70c; No. 30, 3.95c. Quotations f. o. b. Pittsburg, 30 days net, 2 percent off cash 10 days.

Wire and Wire Nails.—The two middle weeks in August have been much better than the same period last year. Mills are running fuller and there is a better demand. Jobbers and retailers have allowed their stocks to run low and are now starting to buy. September is expected to develop a good business, as all indications point in that direction. We quote:

Wire nails, jobbers' carload lots, $1.80; retailers' carload lots, $1.85, and less than carloads, $1.95; painted barb wire, $1.95 for jobbers in carloads; retailers' carloads, $2, and less than carloads, $2.10, with 30c for galvanizing. Annealed smooth fence wire is held at $1.65, with the usual differentials to retailers for carloads and less than carloads. Quotations are all f. o. b. Pittsburg, 60 days, with 2 percent discount for cash in ten days. Iron and steel cut nails, $1.70 to $1.75.

Merchant Steel.—The demand is getting stronger and the tonnage heavier in all branches. Buyers who made contracts some time ago have begun to specify freely. We quote:

Cold rolled and ground shafting, 50 percent off in carload lots, and 45 off in less than carloads, delivered in base territory; tire steel, 1.0c; open hearth spring steel, 2.25c to 2.50c; sleigh shoe flat, 1.50c to 1.55c; smooth finished machinery steel, 1.70c to 1.75c; toe calk, 2c to 2.05c.

Pipes and Tubes.—Conditions are good and contracts continue to be booked freely for both merchant pipe and boiler tubing. There is apparently nothing being done in oil country goods. On account of the sharp competition the concession of three points still holds good. Pittsburg basing discounts are as follows:

Carloads	Steel Black	Steel Galv.	Iron Black	Iron Galv.
⅛ and ¼ inch	68½	52½	66½	50½
⅜ and ½ inch	72½	60½	70½	58½
¾ to 6 inches	76½	63½	75	65
7 to 12 inches	71½	56½	70	54½
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch	60	48	58	46
½ to 4 inches	67	55	65	53
4½ to 8 inches	63	51	61	49
Double extra strong plain ends, ½ to 8 inches	56	45	54	43

MERCHANT BOILER TUBES, CARLOADS, 22 FEET AND UNDER.

	Steel	Iron
1 to 1½ inches	44	41
1¾ to 2¼ inches	56	41
2½ inches	58	46
2¾ to 5 inches	64	53
6 to 13 inches	56	41

Less than carloads, two points less.

Old Material.—More business has been done within the past two weeks than for some little time past, and the increasing number of inquiries is taken to mean that the stocks held by consumers are being used up and a freer trade is expected. We quote:

Heavy melting stock, $15 to $15.75; low phosphorus material, $17.50 to $18; rerolling rails, $14.75 to $15.25; cast scrap, $14.25 to $14.75; borings, $8.75 to $9; No. 1 Wrought, $16 to $16.50.

Coke.—Although but little new business has been done, producers are inclined to ask a little better prices, probably on account of the stiffening in the pig iron market. Furnace coke, for prompt delivery is quoted at $1.80 to $1.95, and foundry at $2.30 to $2.45, although on desirable orders there would not be a great deal of difficulty in shading the 5c advance in quotations.

CHICAGO.

Railroad Buying a Prominent Feature—Strong Pressure for Deliveries.

OFFICE OF *The Iron Trade Review*,
1164 MONADNOCK BLOCK, August 23.

Trading in the past week has not been conspicuously active. But there is an undertone to the market that is remarkable for its lusty vitality. In nearly all the heavy lines, the tonnage on mill books is enormous, and the possibility of catching up seems more hopeless each day as the volume of specifications which every mail brings piles up. The pressure for deliveries is very great, and mills are advising their customers to specify at once if they wish the materials in the next two or three months. This is especially noticeable in steel bars and bands, and also in shapes that enter into the construction of farming implements. Producers of these materials have opened their books for 1906 shipments, and those that have not withdrawn for further deliveries this year are asking premiums of $1 a ton for a guarantee of shipment.

The Harriman interests have contracted with the Corporation for the delivery of the 75,000 tons of heavy rails mentioned last week. In addition to this order, several smaller lots have been placed bringing the week's tonnage up to six figures. There is no change in the structural steel situation, prompt deliveries being obtainable only from a few independent producers and local jobbers. The contracts which the American Ship Building Co. closed last week for two large freighters, making the fourteenth under contract for next year's delivery, and the announcement that negotiations are pending for several more steamers, give assurance of the continuance of present conditions in plate mills for an indefinite period. The purchase of new rolling stock by railroads continues without cessation. Despite the activity in this direction, however, much fear is entertained in this city that a car shortage will be felt this winter. In a modified degree, it has been noticed for several weeks past, but since harvesting commenced the difficulty of getting cars has been most pronounced. No change is noticeable in sheets or merchant pipe. Sharp competition has brought prices very low, and consumers have not been slow to take advantage of this condition. Bar iron is higher, having advanced $1 a ton during the week. Intermediate rolled products are scarce and prices firm. Pig iron is stronger in price, but without other change. Scrap is in fair demand and quotably higher.

Pig Iron.—The transaction of most interest to this market was the purchase last week by a Milwaukee machinery manufacturer of from 9,000 to 10,000 tons of iron for delivery in the first quarter of 1906. The order was divided between Northern and Southern furnaces, 6,000 tons going to the former and the balance to the latter. It is not known at what prices the contracts were closed other than that they were not higher than present schedules. This purchase has been followed by a fair amount of buying, a noticeable feature of which is that a considerable portion of the tonnage is for delivery in the first three months of next year. With but few exceptions, makers of pig iron are now willing to sell

for 1906 delivery at present prices, and a good demand is looked for in the next few weeks. Local irons are very scarce and prices are held firmly to the basis of $16.50 for No. 2. More or less tonnage has been coming into this market from eastern furnaces and offered at 25 cents a ton below local quotations, but not a great deal has been taken up. It is expected that this surplus will be removed if the Corporation buys the 40,000 tons from Valley furnaces for September delivery which, it is reported, was considered. The better known brands of Southern irons remain strong at $12 Birmingham for No. 2. Some offerings have been made at $11.50 and $11.75, but these are usually high phosphorous irons. There is a scarcity in the South of the softer grades, though an ample supply of low grades is reported from all furnace yards, a condition which has served to keep up prices during the dullness of the last two weeks. The car shortage in the South is growing and causing uneasiness to shippers, who are advising their customers to keep good stocks on hand against the possibility of the scarcity becoming more pronounced. We quote as follows:

Lake Superior charcoal	$16.50 to 17.50
Northern Foundry No. 1	16.75 to 17.00
Northern Foundry No. 2	16.25 to 16.50
Northern Foundry No. 3	15.75 to 16.00
Northern Scotch Foundry	16.75 to 17.00
Ohio Strong Softeners No. 1	16.80 to 17.30
Ohio Strong Softeners No. 2	16.30 to 16.80
Southern Foundry No. 1	15.90 to 16.15
Southern Foundry No. 2	15.40 to 15.65
Southern Foundry No. 3	14.90 to 15.15
Southern Foundry No. 4	14.65 to 14.90
Southern No. 1 Soft	15.90 to 16.15
Southern No. 2 Soft	15.40 to 15.65
Southern Gray Forge	14.40 to 14.65
Southern Mottled	14.15 to 14.40
Southern Silveries (4 percent to 6 percent Silicon)	16.65 to 17.65
Jackson Co. Silveries (8 percent to 10 percent Silicon)	19.30 to 19.80
Alabama and Georgia Car Wheel	20.15
Malleable Bessemer	16.25 to 16.50
Basic Iron	16.15 to 16.65

Billets.—The scarcity of billets in this market has not been relieved and prices continue high and firm. One or two independent mills are offering occasional lots of forging billets, for which they obtain prices ranging from $30 to $34, according to the size of the order and delivery required. Wire rods are equally as strong, $30 Pittsburg being the minimum price quoted.

Bars.—Local makers of bar iron have advanced their prices $1 a ton during the week under review, and 1.65c Chicago is the figure quoted on ordinary business. There is a keen demand for this product, specifications from car builders and implement manufacturers being especially heavy. Producers of steel bars in position to give deliveries this year, are asking an advance of $1 a ton above official prices. All the mills have opened their books for next year's requirements, and the tonnage booked to date for delivery in the first half is of good proportions. Specifications against current contracts are very heavy, one large producer having announced that it cannot promise further deliveries this year on either large steel rounds or structural angles. We quote carload lots, mill shipments, Chicago delivery, as follows: Bessemer and open-hearth bars and bands, 1.66½c base, half extras; soft steel angles, less than 3 x 3, 1.76½c; hoops, 1.81½c base, full extras. Store trade is active and prices are firm. We quote bar iron, 1.90c base, full extras; soft steel bars and bands, 1.85c to 1.95c base, full extras; soft steel angles channels, and tees, under 3 in., 1.95c to 2.05c; hoops, 2.20c base, full extras.

Sheets.—The low prices that have been ruling for several weeks have stimulated business. The demand is of excellent proportions, many consumers negotiating for wants as far ahead as mills will permit them. In some independent quarters, there is a disposition to withdraw from the keen fight for business that has waged all summer, this being especially noticeable among producers of heavy gauges and also of galvanized sheets. Though the cutting still continues, this secession has strengthened the market. We quote carload lots, mill shipments, Chicago delivery as follows: Blue annealed sheets Nos. 9 and 10, 1.81½c; Nos. 11 and 12, 1.86½c; Nos. 13 and 14, 1.91½c; Nos. 15 and 16, 2.01½c. On box annealed, one pass, cold rolled, we quote Nos. 18 and 20, 2,21½c; Nos. 22 and 24, 2.26½c; Nos. 25 and 26, 2.31½c; No. 27, 2.36½c; No. 28, 2.46½c; No. 29, 2.56½c; No. 30, 2.66½c. We quote on lots from warehouse stocks as follows: No. 10, 2.10c to 2.15c; No. 12, 2.15c to 2.20c; No. 14, 2.20c to 2.25c; No. 16, 2.30c to 2.35c; Nos. 18 and 20, 2.50c to 2.55c; Nos. 22 and 24, 2.55c to 2.60c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.85c; No. 28, 2.85c to 2.95c; No. 29, 3c to 3.05c. Galvanized sheets, mill shipments, Chicago delivery, are quoted as follows: Nos. 12 and 14, 2.41½c; No. 16, 2.56½c; Nos. 18 and 20, 2.71½c; Nos. 22 and 24, 2.86½c; No. 26, 3.06½c; No. 27, 3.26½c; No. 28, 3.46½c; No. 29, 3.71¼c. Jobbers' prices on lots from store are as follows: Nos. 10 to 14 inclusive, 3.10c; No. 16, 3c; Nos. 18 and 20, 3.10c; Nos. 22 and 24, 3.25c; No. 26, 3.50c; No. 27, 3.70c; No. 28, 3.95c; No. 29, 4.40c; No. 30, 4.85c.

Merchant Pipe.—The cutting of prices, which has been the dominant feature of the local market for several weeks past, continues in an undiminished degree. The card rates of the leading producer have never been changed, but it is possible to buy at a concession of $6 a ton below these, or on the basis of 76.85 percent discount Chicago for ¾ to 6 in. black steel pipe. For round tonnages, it is stated that this price can be bettered.

MERCHANT PIPE.

	Steel.		Iron.	
	Black. Percent.	Galv. Percent.	Black. Percent.	Galv. Percent.
⅛ to ¼ inches	65.85	49.85	63.85	47.85
⅜ to ½ inches	69.85	57.85	67.85	55.85
¾ to 6 inches	73.85	63.85	72.35	62.35
7 to 12 inches	68.85	53.85	67.35	51.85

PLUGGED AND REAMED.

	Steel.	Iron.
1 to 4 inches	71.35	61.35	69.85	59.85

EXTRA STRONG PIPE.

⅛ to ⅜ inches	58.85	46.85	56.85	44.85
½ to 4 inches	65.85	53.85	63.85	51.85
4½ to 8 inches	61.85	49.85	59.85	47.85

DOUBLE EXTRA STRONG PIPE.

½ to 8 inches	54.85	43.85	52.85	41.85

Boiler Tubes.—Local trade continues of good proportions. Mills are filled up with business and jobbers are experiencing some difficulty in getting shipments as frequently as they could desire. Prices are without change, and we quote carload lots, Chicago delivery, as follows:

BOILER TUBES.

	Steel.	Iron.	Seamless.
1 to 1¼ inches	40.35	37.35	53.00
1¼ to 2¼ inches	54.35	39.35	40.00
2½ inches	56.35	44.35	43.00
2¾ to 5 inches	62.35	51.35	Up to 4½ inches 50.50
6 to 13 inches	52.35	37.35	

Less than carload lots from store, as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1¼ inches, inclusive	40	35	42½
1¼ to 2¼ inches, inclusive	50	35	35
2½ inches, inclusive	52½	35	30
2¾ to 5 inches, inclusive	60	47½	42½

Structural Material.—Consumers are contracting very freely for deliveries next year. The difficulty of getting shipments from mills has discouraged a number of building projects to the point of abandonment. Jobbers report a big volume of business, but are experiencing much trouble in keeping their stocks up. The Scully Steel & Iron Co., has profited by the present situation by announcing that it has started work on a large warehouse for the storage of iron and steel shapes which it hopes to have completed early next year. Prices are without change, though premiums are easily obtained for prompt shipments. We quote Chicago delivery, mill shipments, as follows: Beams and channels, 3 to 15 in., inclusive, 1.76½c; angles, 3 to 6 in., ¼ in. and heavier, 1.76½c; angles larger than 6 in., in one or both legs, 1.86½c;

beams larger than 15 in., 1.86½c; zees, 3 in. and over, 1.76½c; tees, 3 in. and over, 1.86½c; with the usual extras for cutting to exact lengths, punchng, coping, bending or other shop work. We quote prices from store as follows: 2.10c to 2.25c for angles, beams and channels, base sizes, with 2.20c to 2.30c for 18, 20 and 24-in. beams; tees and zees, 2.15c to 2.25c. These prices are for either random lengths or cut to specifications in excess of 5 ft.

Plates.—New busines is not of large proportions for the reason that, with but one or two exceptions, all the mills are filled up and out of the market. Specifications are very heavy. Official prices are without change, tank steel, ¼ in. and heavier, up to 100 inches wide, 1.76½c base, Chicago; flange steel, 1.86½c base; marine steel, 1.96½c base, all full extras. Plates, 3-16 in. thick, $2 extras; gauges 7 to 8, $3 extra; No. 9, $5 extra. Less than carload lots, $5 extra. Store quotations are as follows: Tank steel, ¼ in. and heavier, up to and including 72 in. wide, 2c; over 72 in. wide up to 100 in., 2.10c; over 100 in. wide, usual mill extras, 3-16 in. up to but not including 72 in. wide, 2.10c; 3-16 in., 72 in. wide, 2.35c; flanges steel, 25c extra; heads, 25c extra.

Rails and Track Supplies.—The only transaction of importance is the contract placed with the Corporation last week by the Harriman lines for 75,000 tons of standard sections for such deliveries as it can give. Several smaller contracts placed with other mills bring the week's business up to 100,000 tons. We quote heavy sections in 500-ton lots, f. o. b. mill, $28; less than 500 tons to carload lots, $30; less than carload lots, $32. Light rails are as follows: 12-lb. sections, $27; 16-lb., $26; 20 and 25-lb., $25; 30, 35, 40 and 45-lb. sections, $24, all f. o. b. Milwaukee mill. Track supplies, f. o. b. Joliet mill, angle bars, 1.40c to 1.50c; spikes, first quality, 1.75c to 1.80c; track bolts, 3¼ x ¾, with square nuts, 2.40c to 2.50c per lb., with hexagon nuts, 2.55c to 2.65c.

Merchant Steel.—More new business is reported, the bulk of it, however, being for delivery next year. Premiums are being asked for shipments this year, while some interests are considering an advance in prices. We continue to quote carload lots, mill shipments, Chicago delivery as follows: Spring steel, 2.10c; sleigh shoe, flat sizes, 1.71½c; concave and convex, 1.86½c; cutter shoe, 2.35c; smooth finish machinery steel, 1.91½c; smooth finished tire, 1.86c; plow steel, 2.20c and upward, according to quality; toe calk steel, 2.21½c. Cold rolled shafting, 50 percent off in carload lots and 45 percent in less than carload lots. Crucible tool steel, 6½c to 8c; special grades of tool steel, 13c and upwards.

Wire Products.—The heavy orders that are coming in for fall delivery has given a firm tone to the market, and there is some talk of an advance in the near future. Shippers are experiencing some difficulty in getting an ample supply of cars, and customers are being advised to stock heavily in the fear of a possible car famine this winter. Prices are without official change, though it is stated some jobbers have secured concessions. We quote carload lots to jobbers as follows: Wire nails, $1.95; painted barb wire, $2.10; galvanized barb wire, $2.40; smooth annealed wire, $1.80; smooth galvanized wire, $2.10; polished staples, $2.05; galvanized staples, $2.35. Less than carload lots to jobbers are 5 cents higher than above prices. The retail trade is quoted 5 cents extra over the foregoing on carload lots, and 10 cents extra on less than carload lots. Bale ties are unchanged at 82½ and 5 percent to dealers on mixed car lots and 85 percent discount f. o. b. Waukegan, Ill., on straight carload lots.

Coke.—There is a good demand for coke and prices are growing stronger. Connellsville furnace coke is held at $2 to $2.10 ovens, and 72 hour foundry, from $2.40 to $2.50 at the ovens. Wise County, W. Va., grades are quoted at $4.60 to $4.75 Chicago.

Old Material.—There is a good demand for No. 1 cast and stove plate scrap, prices for these grades being very firm. Railroad wrought also shows an improvement and has stiffened in price to the extent of 50 cents a ton in the week under review. Two new railroad lists are out, one from the Burlington for 3,500 tons, and one from the Grand Trunk for 500 tons. The market is very firm, all the material offered being quickly taken up. Aside from one or two products, the consumptive demand for scrap is not heavy. We have revised our prices, and quote gross tons, as follows:

Old steel rails (4 feet and over)	$14.25 to 14.50
Old steel rails (less than 4 feet)	14.00 to 14.50
Old iron rails	19.00 to 19.50
Relaying rails, subject to inspection	23.00 to 24.00
Heavy melting steel	13.00 to 13.50
Mixed country steel	11.50 to 12.00

We quote as follows net tons:

No. 1 R. R. wrought	15.50 to 16.00
No. 2 R. R. wrought	14.50 to 15.00
Shafting	15.50 to 16.00
Dealers' forge, No. 1	12.00 to 12.50
Wrought pipe and flues	11.00 to 11.50
No. 1 cast, 150 lb. and less	13.50 to 14.00
No. 1 mill	9.00 to 9.50
No. 1 Busheling	11.50 to 12.00
No. 2 Busheling	11.00 to 11.50
Country sheet	7.50 to 8.00
No. 1 boilers, cut	10.50 to 11.00
Boiler punchings	13.50 to 14.00
Iron car axles	21.50 to 22.00
Steel car axles	16.50 to 17.00
Iron axle turnings	10.75 to 11.00
Cast borings	8.00 to 8.50
Mixed borings, etc	8.00 to 8.50
Machine shop turnings	10.25 to 10.75
Railroad malleable	13.00 to 13.50
Agricultural malleable	12.50 to 13.00
Stove plate and light cast scrap	11.00 to 11.50
Old iron splice bars	17.00 to 17.50

CINCINNATI.

Fair Buying of Steel Making Iron, But Foundry Grades are Dull.

August 23.

Pig Iron.—While the market has remained quiet and unchanged in a general way, there has been a little more buying than in the preceeding week. An Ohio stove manufacturer is reported to have bought about 4,000 tons during the week equally divided between Northern and Southern brands, including some high silicon iron. The Southern iron went at about $11.50 Birmingham. Another Ohio melter purchased about 1,000 tons of Northern and is in the market for some Southern iron. A good inquiry for Bessemer and basic iron comes from the St. Louis territory. There is also fair buying of charcoal iron. A sale of 3,000 tons of charcoal is reported at $15.50 Birmingham. There is an inquiry for 8,000 tons of malleable Bessemer from one melter and another for 500 tons of the same from St. Louis concerns. A sale of 2,000 tons of basic iron by a Virginia furnace for St. Louis is also reported. Some southern gray forge was sold to a Virginia melter at $10.50 Brmingham. It will be noted that the bulk of this business is out of this territory and does not reflect much activity in foundry irons. It is a matter of general comment that the higher grades of iron are not plentiful and that furnaces have a quite satisfactory tonnage booked for these grades, but that the lower grades, notably gray forge, mottled and white iron, are exceedingly dull and the most urgent efforts of sales agencies fail to find buyers at all interested in these grades. Gray forge is obtainable at $10.25 Birmingham and it is quite possible that $10.00 could be done. In Southern Ohio $14.00 furnace continues minimum and in some cases quotations of $14.25 and $14.50 are being held by furnace companies. The future of the market apparently depends upon the buying in September and October. In some quarters, it is confidently believed that there will be a resumption of buying about the first of October, while there are those in the trade who believe that a large part of the consumers are covered for the balance of the year and that buying cannot be expected in good volume until December. From all quarters, however, there are re-

ports of satisfactory business conditions in the iron and steel trade and liberal consumption of iron through the territory. Quotations f. o. b. Cincinnati are as follows:

Southern Foundry No. 1	$14.75 to 15.25
Southern Foundry No. 2	14.25 to 14.75
Southern Foundry No. 3	13.75 to 14.25
Southern Foundry No. 4	13.50 to 14.00
Southern Foundry No. 1, soft	14.75 to 15.25
Southern Foundry No. 2, soft	14.25 to 14.75
Gray Forge	13.00 to 13.75
Northern Foundry No. 1	15.65 to 15.90
Northern Foundry No. 2	15.15 to 15.40
Northern Foundry No. 3	14.65 to 14.90
Jackson County Silvery, 8 percent	18.15
Southern Charcoal	18.25 to 18.75

Finished Material.—There is a fairly actice demand for all descriptions and the market is firm, and trade satisfactory. The recent advance in bar iron is well maintained. Bar iron is quoted at 1.65c; steel bars at 1.63c. half extras, with dealers quoting 1.85c for iron and steel out of store. Galvanized sheets at 75 and 7½ percent off. We quote black sheets, No. 27 at 2.40c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 2.70c; No. 27, 2.60c; No. 16, 2.20c; No. 14, 2.10c; No. 12, 2.05c; No. 10, 2c. Tank plates are firm and sell out of store at 2c for ¼ in. and 2.16c for 3-16, No. 8 and No. 10. Beams and channels are quoted at 2c from stock and angles at 2c to 2.05c. for base sizes.

In merchant pipe trade is quiet and it is intimated that independent mills are seeking business on some sizes at prices slightly below the schedule of the leading interests. Quotations f. o. b. Cincinnati are:

MERCHANT PIPE.

(Basing Discounts.)

	Steel Pipe.		Guaranteed Wrought Iron Pipe.	
	Black.	Galv.	Black.	Galv.
	Percent.	Percent.	Percent.	Percent.
⅛ and ¼ inches	65.35	49.35	63.35	47.35
⅜ and ½ inches	69.35	57.25	67.35	55.35
¾ to 6 inches	73.35	63.35	75.85	61.85
7 to 12 inches	68.35	53.35	66.85	51.35

Old Material.—The market holds steady to firm with a fairly good demand. We quote:

Old No. 1 railroad wrought, net tons	$14.00 to 15.00
Cast machine and foundry, net tons	12.00 to 13.00
Old iron rails, gross tons	20.00 to 21.00
Old steel rails, gross tons	15.00 to 16.00
Old short lengths, gross tons	14.00 to 15.00
Old iron axles, net tons	20.00 to 21.00
Stove plate, net tons	9.50 to 10.00
Wrought turnings, net tons	9.00 to 10.00
Cast borings, net tons	7.50 to 8.00
Car wheels, net tons	14.00 to 14.50

Coke.—A strong tone prevails and the recent strengthening of quotations has been fully maintained. Wise County, Virginia, prompt shipment furnace coke continues scarce. Some fairly good foundry coke contracts have been made during the week. Current prices at the various coke producing districts are as follows f. o. b. ovens:

†Wise County, Va. Furnace Coke prompt shipment	$2.15 to $2.25 per ton
Wise County, Va. Foundry Coke on contracts	2.35 to 2.40 per ton
Pocahontas Furnace Coke on contracts	1.85 to 2.00 per ton
Pocahontas Foundry Coke on contracts	2.10 to 2.25 per ton
*Connellsville Furnace Coke on contracts	1.75 to 2.00 per ton
*Connellsville Foundry Coke on contracts	2.25 to 2.50 per ton
Kanawha Furnace Coke on contracts	2.00 per ton
Kanawha Foundry Coke on contracts	2.35 to 2.50 per ton

†Wise County, Va., Coke on Furnace contracts is sold mainly on a sliding scale basis for pig iron prices.

*Connellsville Coke inside prices apply to "main line" ovens and not to strictly Connellsville Coke.

CLEVELAND.

Negotiations for Purchase of Bessemer—Orders for Vessels Expected.

OFFICE OF *The Iron Trade Review*,
BROWNING BUILDING, August 23.

Iron Ore.—Continued heavy rains are still interfering with the operation of mines, and boats at upper lake ports are frequently delayed three and four days. At lower lake ports more ore is arriving than the furnaces need and a large tonnage is being placed on the docks. There is still inquiry for ore and we note the sale of 30,000 tons by one agency this week. While it is probable that the total shipments for August will not equal those of July, it seems a safe prediction that the shipments will amount to very nearly 5,000,000 tons. One very large selling agency predicts that the vessels will not be able to bring down all the ore which has been sold.

Pig Iron.—The most important development of the week has been in regard to the expected purchase of Bessemer pig iron by the Steel Corporation. The corporation is now using its surplus iron at the rate of 20,000 tons a day, and, in informal conferences which have been held with the officers of the corporation, they have expressed the opinion that purchases for September requirements will be necessary. It is understood that there is some difference of opinion between the Bessemer Association and the corporation as to the price which should be paid, but, as the diplomats say, although a "note of divergence" has been entered, it is not anticipated that there will be serious difficulty in reaching an agreement. The sellers are rather firm and say that even if the corporation should not place an order, the market will be strong. For basic there is liberal inquiry, one company stating that it has business amounting to 10,000 tons pending. On basic, Bessemer and No. 2 foundry the ordinary quotation is now $14.50, Valley. Some buyers are inquiring for the first quarter of 1906, but sellers as a rule are not anxious to contract at present prices. In Southern irons there is not much business being done and prices are unchanged. We quote f. o. b. Cleveland as follows:

Bessemer	$15.35 to 15.60
No. 1 Foundry	15.50 to 15.75
No. 2 Foundry	14.50 to 15.00
No. 3 Foundry	14.25 to 14.50
No. 2 Southern	15.50 to 15.85
Gray Forge	14.00 to 14.25
Gray Forge, Southern	14.00 to 14.15
Lake Superior charcoal	16.25 to 16.50

Finished Material.—In addition to contracts already let it is probable that within a few days orders will be placed for four large freighters. The demand for plates for vessels and other purposes will tax the capacity of the mills well up into next year. The delay in delivering structural material is having more effect than the strike of the structural iron workers on building operations, some of which may be postponed until next year. Bar iron is strong at 1.55c to 1.60c at the mill, and in some cases 1.65c has been asked. The principal producer of merchant pipe has reduced prices 1½ points, but cutting is still being done.

Old Material.—The price has been advanced on nearly all kinds of scrap and transactions are more numerous. Sellers anticipate a further advance. We revise quotations, Cleveland delivery, as follows:

Old iron rails	$21.50 to 22.50
Old steel rails (over 6 feet)	15.50 to 16.50
Old steel rails (under 6 feet)	15.50 to 16.50
Old car wheels	15.00 to 15.50
Steel boiler plate	11.50 to 12.00
Steel axles	17.50 to 18.50
Malleable iron (railroad)	14.50 to 15.50
Malleable iron (agricultural)	13.50 to 14.50
Heavy steel	15.50 to 16.00

We quote as follows, net tons:

No. 1 R. R. wrought	15.00 to 16.00
No. 1 busheling	13.00 to 14.00
No. 1 machine cast	13.00 to 13.50
Iron axles	20.00 to 21.00
Axle turnings	11.00 to 12.00
Wrought turnings (free from cast)	10.00 to 11.00
Grate bars	8.50 to 9.50
Pipes and flues	11.50 to 12.50
Tank iron	9.50 to 10.50
Hoop and band iron	8.00 to 9.00
Sheet iron	7.00 to 8.00
Wrought drillings	10.00 to 11.00
Stove plate	10.00 to 10.50
Cast borings	8.00 to 9.00

The pattern department of the Washington Iron Works, Seattle, Wash., was damaged to the extent of $3,000 recently. The origin of the fire is unknown.

PHILADELPHIA.

Concessions Occasionally Made—Urgent Demand for Shapes.

PHILADELPHIA, Aug. 22.—Nothing has happened during the past week to mar the serenity of the local market, which continues dull, but fairly firm. Some of the smaller furnace men, who were very stiff in their prices during the July spurt, seem to have become a little apprehensive on account of the lull which has succeeded, and rather than let any business get away from them, have been willing to make concessions from the figures quoted last month. The result has naturally been to strengthen backward buyers in their waiting attitude and to delay the placing of large orders. The general situation, however, cannot be considered other than most satisfactory. There is a steady volume of small orders, mostly from 50 to 200 tons, and occasionally rising to 1,000 and 2,000 tons, and prospect for the fall and winter, as revealed in heavy contracts placed, like that of the Pennsylvania Steel Co. for the Manhattan bridge in New York, seem to insure a very large demand on the furnaces.

Pig Iron.—The present lull in buying is so perfectly natural that it is viewed with unconcern by the more important producers. Their order books show plenty to keep them busy, and the consumption continues record-breaking. There have been some slight price changes, due to the desire of some smaller furnaces to meet the wishes of customers, but the best belief is that prices are bound to work upward in the near future, even if only slightly. In the meantime these figures are quoted:

No. 1X Foundry	$17 00 to 17 25
No. 2X Foundry	16.25 to 16.50
No. 2 Plain	15.75 to 16.00
Standard Gray Forge	14.75 to 15.00
Ordinary Gray Forge	14.25 to 14.50
Basic	15.00 to 15.50
Low Phosphoros	20.25 to 20.75
Southern No. 2X, rail	15.50 to 16.00
Southern No. 2X, dock	15.00 to 15.50

Finished Material.—The demand upon the mills making structural material grows steadily heavier and more urgent, with the result that premiums in some cases are said to have risen to $10 a ton. In view of the immense new business hanging over the market in the form of new bridges, new railroad cars, material for new buildings and plates for shipbuilding it would seem that either some new enterprises must be greatly delayed or temporarily abandoned. In the lighter lines reasonably prompt delivery can be promiesd. Prices remain unchanged as follows: Beams, channels and angles, according to specifications, 1.73½c to 1.90c; refined iron bars, 1.63½c to 1.80c; steel bars, 1.63½c to 1.70c; plates, 1.73½c to 1.80c.

Old Material.—Higher prices are asked in many lines. Some speculative dealers are indeed inclined to push them still higher, to the possible detriment of the market, which continues to improve. These figures may be quoted:

Old steel rails	$16.50 to 17.00
No. 1 steel scrap	15.50 to 16.00
Old steel axles	18.50 to 19.50
Old iron axles	23.00 to 24.00
Old iron rails	20.00 to 21.00
Old car wheels	15.50 to 16.50
Choice scrap, R. R. No. 1 wrought	19.00 to 20.00
No. 1 yard scrap	17.00 to 18.00
Machinery scrap	15.00 to 15.50
Low phosphorus scrap	19.00 to 20.00
Wrought iron pipe	15.00 to 15.50
No. 1 forge fire scrap	14.25 to 14.75
No. 2 forge fire scrap, ordinary	11.50 to 12.00
Wrought turnings	13.00 to 13.50
Axle turnings, heavy	14.00 to 14.25
Cast borings	9.50 to 9.75
Stove plates	12.50 to 13.00

The plant of the Newcastle Forge & Bolt Co., Newcastle, Pa., was destroyed by fire Aug. 20, causing a loss estimated at $100,000.

NEW YORK.

Large Transactions in Rails—Pig Iron is Quiet, but Firm.

OFFICE OF *The Iron Trade Review*,
ROOM 1315, No. 150 NASSAU ST., August 23.

Pig Iron.—The pig iron market has been quiet during the week with prices firm and, in the case of several furnaces, a shade higher. A number of producers are sold out sufficiently far ahead to ignore present offers of business. Foundry grades have enjoyed merely a regular consuming demand, the total of transactions not exceeding 15,000 tons, mostly in comparatively small lots for prompt delivery. Some 10,000 tons of basic and a few hundred tons of charcoal complete the record of a quiet week. There were several fair-sized orders for Southern basic, and foundry grades from furnaces in Pennsylvania, Ohio, New York and New Jersey, but the bulk of the transaction concerns Virginia producers. Among the sales of the week were two lots of 500 tons each of special analysis iron for the Harrison plant of the International Steam Pump Co., and several others ranging from 1,000 to 2,000 tons each, but few exceeded a few hundred tons. Inquiries were fairly numerous, the Steam Pump Co. desiring bids for 300 and 500-ton lots for its Buffalo and Ohio plants. A pipe foundry, a steel foundry and a large producer of heavy machinery are also in the market for lots varying from 1,000 to 2,000 tons each. The following are prices at tidewater:

Northern No. 1 Foundry	$16 50 to 16.75
No. 2 Foundry	16.00 to 16.25
No. 2 Plain	15.50 to 15.75
No. 1 Southern Foundry	16.25
No. 2 Southern Foundry	15.50 to 15.75
No. 3 Southern Foundry	15.25
No. 4 Foundry	14.50 to 14.75

Pig Iron Certificates.—The market for pig iron certificates has been dull and uninteresting. There were a number of bids, but few transactions, owing to an inability to meet on common ground as to price. A sale of 200 tons, February regular, was effected on a basis of $15.50. Foundry iron warrants follow:

	Bid.	Asked.
August	15.00	15.50
October	15.20	15.60
November	15.25	15.70
December	15.35	15.75
February	15.50	15.90

Finished Iron and Steel.—The demand for the heavier shapes of steel continues urgent, the most extensive buyers for the past week having been the railroads of the country. Southern and Western roads are still negotiating for very heavy tonnages of rails. The aggregate of the steel rails purchased since Aug. 1 is said to exceed 200,000 tons and lots making up a total of some 90,000 tons are still under negotiation.

The aggregate tonnage of structural shapes purchased during the week has been comparatively small, not exceeding 20,000 tons, most of the contracts going to independent interests. Attention is however centered upon this material because of the urgency of the demand. Plates, bars and sheets are fairly active with good prospects for a revival in the fall. We quote prices at tidewater: Angles, 3 to 6 in. x ¼ in. and heavier, 1.74½c; beams, 3 to 15 in. 1.74½c; 1.84½c; tees, 3 x 15 in. 1.74½c; beams, 18, 20 and 24 in. 1.84½c; tees, 3 x ¼ in. and heavier, 1.79½c; plates, carloads, tank, 1.74½c; flange, 1.84½c; marine and ordinary firebox, 1.94½c; refined iron bars, 1.60c; soft steel bars, 1.64½c to 1.67c; sheets in carload lots, New York, No. 28, black, 2.40c.

Old Materials.—Values continued strong throughout the week with no conspicuous changes. The demand for steel scrap has slackened off somewhat without affecting prices. There were several inquiries for railroad and wrought scrap

but few lots were offered for sale, holders evidently looking for higher prices. The following prices are f. o. b. approximately, at tidewater:

Old iron rails	$20.00 to 21.00
Old steel rails, long lengths	14.50 to 15.00
Old steel rails, short pieces	14.00 to 14.50
Relaying rails	22.50 to 23.00
Old car wheels	15.00 to 16.00
Old iron car axles	21.00 to 22.00
Old steel car axles	18.50 to 19.00
Heavy melting steel scrap	13.50 to 14.00
No. 1 railroad wrought scrap	17.00 to 18.00
Iron track scrap	15.00 to 16.00
Wrought pipe	12.00 to 13.00
Cast borings	8.50 to 9.00
Wrought turnings	12.25 to 12.75

BIRMINGHAM.

Good Demand for Spot Iron—Car Situation is Improving.

BIRMINGHAM, ALA., August, 22.—Spot iron was active in the Southern territory during the past week and the aggregate was very good. The market is firm and while the demand is not as steady as it was last month, it is very satisfactory. Quotations are holding up well, No. 2 foundry still selling at $12 per ton. Two of the Alabama companies are out of the market as far as No. 1 and No. 2 foundry iron go, and No. 1 soft. For the latter grade short delivery orders are bringing fifty cents advance on the market prices. No. 2 soft iron is also scarce. The two companies out of the market announce that they cannot handle much more business for two months yet. However, it is believed that active buying will start up again in the next few weeks for delivery during the last quarter of the year.

The shipments of pig iron from this district are steady. The iron is going in all directions. Railroad officials announce that they are able to handle all the iron that is offered them, as the car shortage has been overcome. It is admitted by the railroad folks that the iron shipment is quite extensive right now and bids fair to continue active through the balance of the year. Assistant General Superintendent M. M. Richey, of the Southern Railway, in a short statement just given out here, does not anticipate very much congestion this coming fall and winter, when the coal and iron mart picks up again, and says that preparations are being made to handle the product as quickly as it can be furnished to the railroads.

The production in Alabama is strong. The Tennesse Coal, Iron & R. R. Co., will blow in one furnace at Bessemer and one at Oxmoor, by the end of this week or the first of next. This will add some four hundred tons to the daily output. Four hundred men are being sought now to be employed around the furnaces. This company is now paying from $1.20 to $1.30 per day to the furnace help.

The following quotations for iron are given in this section: No. 1, foundry, $12.50; No. 2, foundry, $12; No. 3, foundry, $11.50; No. 4, foundry, $11; gray forge, $10.50 to $11.00; No. 1, soft, $12.50 to $13; No. 2, soft, $12 to $12.50.

It is stated that the Tennessee Coal, Iron & R. R. Co. have orders for steel rails which will require steady operation all through the coming year. The production at this plant is steady.

The Empire Plow Co. will resume operations at its plant at Ensley next Monday, with orders on hand or in sight to keep it busy until next April at least and during the winter it is expected to put on a day and night shift. This plant will need quite an amount of steel.

The North Birmingham Forge Co. will begin operations in at least two of their departments at North Birmingham, Sept. 1. This is a new concern for the district. The concern is now placing some extremely heavy machinery and expects to do castings from one ounce to ten tons

The statement is made that a branch of a Chicago screw works will be located in the Birmingham district. Representatives of the company are said to be seeking property on which to erect their plant at North Birmingham.

No statement is made as yet as to the location of the branch plant of the American Car & Foundry Co., though it is reasonably sure that such a plant is to be erected in this section of the country.

The production and shipment of cast iron pipe is still very heavy. Frederick Dimmick, president of the Dimmick Pipe Co., states that there is a good demand for the product.

The Metal Market.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
1164 MONADNOCK BLOCK, August 23.

All metals are extremely firm and of an upward tendency. Copper is scarce and has advanced an eighth of a cent since our last report. Active buying continues among Western melters. We quote as follows: Lake copper, 16½c for carload lots, and 16¾ for less than carload lots. Casting copper, 16¼c for carload lots, and 16½c for less than carload lots. Spelter is higher and is now quoted 6c for carload lots, and 6¼c for lesser quantities. Sheet zinc is firm but without change as to price, carload lots of 600-lb. casks being offered at 7¼c, and less than carload lots at 7½c. Pig lead is 4.65c for 50-ton lots, 4.70c for carload lots and 4.80c for less than carload lots. Antimony, 17c for Hallett's, and 18c for Cookson's.

There is a brisk demand for old metals and several grades show advances in prices. Dealers' quotations are approximately as follows: Copper wire, 13¼c; heavy copper, 13c; copper bottoms, 12c; copper clips, 12¾c; red brass, 11¾c; red brass borings, 9¾c; yellow brass, 8½c; yellow brass borings, 7¾c; pipe lead, 4c. Tea lead, 3.60c. Zinc, 3¾c.

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1315, No. 150 NASSAU ST., August 23.

Pig Tin.—Business has not been active but prices remain firm. Large importations have produced a somewhat weaker feeling but London has maintained a very strong position on futures. Today's closings follow: Spot, 32.75c to 33c; September, 32.65c to 33c; London, £150 and £149 7s 6d. Arrivals 2,497 tons to date, with 2,245 tons afloat.

Copper.—Prices are firm and a shade higher. Most of the transactions have been in small lots although a few fair-sized orders for delivery during the last two months of the year were placed. Today's closings follow: Lake and electrolytic, 15¾c to 16c; casting 15⅜c to 15⅝c. London's closings today: £69 17s 6d and £69 13s 9d. Exports for the month 12,190 tons.

Lead.—There was only a moderate demand for all grades of lead and the market has been quiet and a shade easier. Today's closings: 4.60c to 4.70c. St. Louis, 4.50c; London, £14.

Spelter.—The local market has developed an easier tone and the demand is less active. Today's quotations: Spot, 5.70c to 5.80c; St. Louis, 5.62½c; London, £24 15s.

Antimony.—Business has been quiet. Prices are: Hallett's, 15c to 16c, and other brands 13½c to 14c.

Great Lakes Engineering Works Buys Shipyards.—The ship building plant of the Columbia Iron Works at St. Clair, Mich., has been purchased outright by the Great Lakes Engineering Works, Detroit. The St. Clair plant has been operated under lease for some time by the Great Lakes company, but will now be largely improved in the way of machinery.

ARBITRATION

MAY END THE STRIKE OF THE STRUCTURAL IRON WORKERS.

Some Contracts Relinquished—The American Bridge Co. Issues a Statement as to Its Position.

As the strike of the structural iron workers progresses, it is evident that, though it will be a signal failure, it is causing the American Bridge Co. considerable annoyance. As a result of a conference between President Major and Manager Lofland of the Bridge Co., the following statement was given out.

"We expect to have the strike submitted to arbitration. The proposition is that the men return to work while the matter is being abitrated, the board of arbitration to make its report within six days after getting to work on the proposition."

The company has been compelled to give up its contracts with the Chicago Elevated road, with the Southern Pacific road and with the Union Pacific. Each of these concerns has, at the request of the American Bridge Co., taken the work in its own hands, and it is being finished with non-union labor.

At the same time, though the labor union has not failed to affect the work of the bridge company to such an extent as to make a speedy settlement desirable, the American Bridge Co. gained a signal advantage by practically creating a corner, in what is known as "fitters up," a class of expert workmen in the shops, without whose services the shops would be in a bad way. These people were seen as soon as the rumor of strike became prevalent, and they were offered great inducements to remain at work. Not only did the American Bridge Co. deal thus with the fitters in its employ then, but sent out to union shops and offered such prices as would bring to it the best of the fitters there. So when the structural people came to extend their strike by getting the fitters in line, they were met by a stonewall of well satisfied and high priced workmen, who refused to consider such a thing as strike.

The Company's Statement.

The following statement has been issued by the American Bridge Co.,

"The present strike of the structural ironworkers against the American Bridge Co., has been brewing for the past year, the question being whether or not the American Bridge Co. has the right to make contracts for the erection of structural material and bridge work with firms making a specialty of this class of work.

"In the last two months agreements have been made between the American Bridge Co., and the Structural Ironworkers' union in Cleveland and in other cities, and on the day following the Cleveland agreement, the structural ironworkers came out with the statement that they had won the victory and they had secured everything asked for. They promised the company at this time that work in Ohio would go on without any interruption, but notwithstanding all this they went out on a strike within less than six weeks after making the agreement. Whether or not this was an honorable thing for them to do is a question the public can easily decide for themselves.

"The direct cause of the present strike is that the Boston Bridge Works is erecting a bridge at New Haven, Conn., for the American Brdge Co., and is employing non-union labor. The union has attempted to unionize the Boston forces without success, and in order to bring greater pressure to bear a strike has been called on all work being done by or for the American Bridge Co. The Boston Bridge Works in the meantime is going along smoothly with the execution of its contract and will undoubtedly finish in due season, and turn the work over to the satisfaction to everyone legitimately concerned. The structural ironworkers claim that they intend to fight ths question out at this time, and since starting this trouble they have also made another demand, so that now their demands are as follows:

"First—The American Bridge Co., shall sublet no erection to any concern that will not make a satisfactory arrangement with the union.

"Second—That the American Bridge Co., shall sell no material free on board cars at any place or to any individual, firm or corporation that will not agree to enter into a satisfactory agreement with the union for the erection of the material sold.

"If the American Bridge Co., should comply with the above demands it would first have to join hands with the unions and attempt to unionize every railroad, manufacturing concern and all others using structural and bridge material in this country and, failing in so doing, the only alternative would be to close the company's shops.

"The American Bridge Co. does not anticipate any serious delay on account of this strike. Many of the important locals, particularly in Chicago, have declined to strike at all. They expect no trouble in the shops or mills whatever, these men being fully satisfied with the present conditions."

LABOR NOTES.

The convention of the Amalgamated Sheet Metal Workers' Alliance being held at Nashville, Tenn., adjourned finally Aug. 12 after electing officers and fixing upon Atlantic City, N. J., as the place for holding the next meeting in July, 1907. The following officers were elected: President, M. O'Sullivan, Pittsburg; first vice president, Thos. Redding, Chicago; second vice president, J. T. McTigue, Nashville, Tenn.; secretary-treasurer, J. E. Bray, Kansas City, Mo.

The molders of the Farbanks-Morse plant at Beloit, Wis., who walked out recently because of alleged grievances over shop rules, have returned to work and will submit their grievances to the company. The officials of the International Molders did not sanction the walk-out.

Electric Equipment for N. Y. Central.

The New York Central & Hudson River R. R. has placed orders for 35 electric locomotives and 175 cars, for use in its suburban service. The cars will be of steel and will be built by the American Car & Foundry Co., the electric equipment being supplied by the General Electric Co. The locomotives will be built by the General Electric Co. and the American Locomotive Co., will weigh 95 tons and will be capable of hauling a train of eight cars at the rate of 65 miles an hour. Each locomotive will have eight driving wheels, 44 inches in diameter and they will be used to haul through trains from Croton, 35 miles out, and White Plains, into the Grand Central Station. Locomotives and cars are to be delivered by Aug. 1, 1906.

No Change in Prices of Bar Iron and Bolts.

The Eastern Bar Iron Association which held its regular monthly meeting in New York, August 16, decided unanimously to reaffirm the official quotation on iron bars at $1.50 per 100 pounds, c. i. f. Pittsburg. Leading mills are in many cases securing $2 and $3 more than the official figures per ton, but an advance was not considered advisable, members being urged to continue their premiums.

A meeting of the nut and bolt manufacturers was held on the same day with the result that the official quotations on these products were also reaffirmed.

PERSONAL.

J. E. Ingram, formerly treasurer of the National Engineering & Stamping Co., has been succeeded by A. M. Steinhardt.

Thomas Glasgow, of Mt. Vernon, Ind., has been appointed agent for the Joliet Bridge & Iron Co., of Joliet, Ill., which has been admitted to do business in Indiana.

Pella Anderson, general manager of the Brown-Corliss Engine Co., at Corliss, Wis., has resigned to accept a similar position with the Milwaukee Mining & Power Machinery Co., at Cudahy.

Don H. Bacon, president of the Tennesse Coal, Iron & R. R. Co., has gone on a trip to Thousand Islands for a few weeks.

J. H. Briscoe, assistant western manager of the Chesapeake & Ohio Coal & Coke Co., Cincinnati, O., is on his way to the Lewis and Clark exposition at Portland. He will be absent from his duties for about three weeks.

Willard C. Taylor, European manager for the Keasbey Mattison Co., of Ambler, Pa., is in this country for a ten days' stay. This concern is a large manufacturer of asbestos coverings for pipes and boilers.

The Independent Pneumatic Tool Co., Chicago, has just appointed R. S. Cooper, former representative of the Rand Drill Co., at Pittsburg, manager of its New York office at 170 Broadway.

M. T. Bassett has been appointed assistant chief engineer of the Allis-Chambers Co., with offices in Milwaukee. Mr. Bassett was formerly connected with the Bullock Electrical Works at Cincinnati.

A new committee on standards for testing coke for foundry use has been appointed by the American Society for Testing Materials. C. H. Zehnder of Rogers, Brown & Co., Philadelphia, is the chairman and Dr. Richard Moldenke of Watchung, N. J., the secretary.

J. R. McColl, who was until the close of the last college term, associate professor of steam engineering at Purdue University, has accepted a responsible position in the engineering department of the American Blower Co., at Detroit.

J. A. Vail of New York city has been selected as general manager of the Fairbanks-Morse Manufacturing Co.'s plant at Beloit, Wis., and he will arrive there about Sept. 1. Mr. Vail has been the New York manager for the Allis-Chalmers Co. for several years.

J. H. Prastka, manufacturers' agent for the sale of iron, steel, machinery, boiler makers' supplies, tools, etc., has opened an office in the O'Hara block, Cedar Rapids, Ia. Joseph T. Ryerson & Son and the Scully Steel & Iron Co., Chicago, are among those he will represent. Mr. Prastka was formerly in the employ of J. T. Carmody, Cedar Rapids.

Walter E. Harrington has severed his connection as vice-president and general manager of the New York-Philadelphia Co., to become associated with J. G. White & Co., New York, as operating manager. Mr. Harrington has had an exceptionally broad experience in the engineering field, particularly in the operation of electric railway, lighting and gas properties.

O. E. Rea, formerly mechanical engineer with the Illinois Steel Co., Chicago, has accepted a similar position with the Vaughn & Bushnell Mfg. Co., Chicago.

W. H. Speller, formerly in charge of the engineering department of the Wilcox Mfg. Co., Aurora, Ill., is now with the Weber Gas & Gasoline Engine Co., Kansas City, Mo.

MANHATTAN BRIDGE CONTRACT ENJOINED.

The day after the contract for the steel superstructure for the new Manhattan bridge between New York and Brooklyn had been awarded to the lowest bidder, The Pennsylvania Steel Co., Bridge Commissioner George E. Best was served with a summons to appear before Justice Dowling to show cause why a permanent injunction should not be granted, restraining him from carrying out for the city any of the terms of the contract. Justice Amend granted a temporary injunction pending the trial of the action. The hearing was postponed until Sept. 6. Work upon the contract is therefore delayed at least three weeks, and since the terms carry a time limit clause, the parties to the agreement are embarrassed to that extent.

The action was brought by Peter A. Gage who, according to Commissioner Best, represents the interests of John Peirce, who was the next lowest bidder for the contract. The engineer upon whose advice the action was brought is said to be the same as the one who was instrumental in bringing similar suits during the building of the Williamsburg bridge.

In the complaint there are three allegations why a permanent injunction should be granted. It is claimed that of the total 43,000 tons of steel required, the specifications called for 8,000 tons of a metal having an unusually high tensile strength which must be either nickel steel or a high carbon material, the conditions making it optional whether 8,000 tons of the one or 9,000 tons of the other be furnished at the same price. This, it is claimed, prevents fair and open competition, bidders being unaware of the exact quality of material bid upon, and the result being wasteful of the taxpayers' money. The second allegation also claims a fraud upon the public in that the specifications which called for acid open hearth steel had been so drawn that only one firm could meet the requirements, thus limiting competition. The third argument is that as good material could be made by another process and supplied at much less cost.

To these charges the chief engineer of the department replies that since the very high tensile steel had not hitherto been employed in construction of this kind, it was necessary to allow an alternative; furthermore, that the acid open hearth material could be made not by one firm only but by at least a dozen different plants in this country.

Cleveland Manufacturer Incorporates.

The Cleveland Steam Boiler Works, Cleveland, O., which was founded about 30 years ago by Daniel Connelly, who has been the sole proprietor continuously since it was established, has been incorporated under the laws of Ohio and under the name of The D. Connelly Boiler Co., with the following incorporators: Daniel Connelly, William C. Connelly, Lawrence E. Connelly, Kate Connelly and Chirstian E. Schafer, with a capital of $100,000. All the incorporators with the exception of Mr. Schafer are members of Mr. Connelly's family and Mr. Schafer has been superintendent for Mr. Connelly for several years.

From a small beginning this business has grown to be one of the best known boiler shops in the country, and has shipped work to all parts of the world.

The plant is one of the best equipped in its line in the country, having large hydraulic riveter, hydraulic flanging press, spinning machine for flanging of round heads, large punches, large bending rolls, traveling cranes and all modern equipment. This concern builds anything of steel plate from 1-16 in. to 1½ in. in thickness. Among the recent large orders it has completed were 20 Scotch boilers each 11 ft. in diameter.

The Fannie furnace of the Cherry Valley Iron Co., will be blown in during the coming week. No. 3 furnace of the Shenango Furnace Co., has been blown out for relining and will resume about October 1.

RECORD WEEK IN STOCKS

A Million Share Day—Industrial Prospects Encouraging—Railroads Active.

The activity in the stock market during the past week has been unusual, both in the matter of trading and variation in quotations. The bullish sentiment has continued to prevail, though not producing such a pronounced rise as in preceding weeks. The tendency of the market is upward, but is conservative and firm and upheld by a prevailing confidence in industrial conditions. Peace negotiations at Portsmouth, while they have lost a great deal of their influence on the market, have been rather less favorable and have contributed toward an air of uncertainty in trade. The financing of the crops is becoming a larger factor daily. A scarcity of money, except on the Pacific coast, seems to exist, though it is expected that a favorable termination of the peace conference will result in a return movement of European capital. The iron and steel trade has continued to present an extremely hopeful outlook. The stock table below indicates that the changes in quotations during the week were less pronounced and erratic and about equally divided between declines and rises.

	Aug. 14	Aug. 21	Changes
Allis Chalmers Co.	17⅝	17½	— ⅛
Allis Chalmers preferred	.....	57	.....
American Can	11⅞	11½	— ⅜
American Can preferred	69⅛	70⅛	+1
American Car and Foundry	37	38	+1
American Locomotive	48⅜	54⅜	+6
American Locomotive preferred	111⅝	114⅛	+2½
American Shipbuilding	53¼	53¼	.....
American Shipbuilding preferred	105¼	105	— ¼
American Steel Foundries	9¼	9¼	.....
American Steel Foundries preferred	39	39	.....
Bethlehem Steel	34½	33	—1½
Bethlehem Steel preferred	90½	89	—1½
Cambria Steel	27¼	27⅛	— ⅛
Colorado Fuel & Iron	45¾	47¼	—1½
Crucible Steel	125⅝	125½	— ⅛
Crucible Steel preferred	65½	64	—1½
General Electric	184⅝	184	— ⅝
International Pump	28	26	—2
International Pump preferred	82	83	+1
Pittsburg Coal Co.	14⅛	.....	.....
Pittsburg Coal preferred	54	53	—1
Pressed Steel Car	45½	46¼	+1¼
Pullman Palace Car	257	251	—6
Railway Steel Spring	36½	37¼	+ ¾
Sloss-Sheffield	91	91	.....
Tennessee Coal & Iron	90	90½	+ ½
U. S. Cast Iron Pipe & Foundry Co.	31	30⅞	— ⅛
U. S. Steel	36¼	36½	+ ¼
U. S. Steel preferred	104⅜	104⅝	+ ⅛
U. S. Steel 5's	97⅜	97⅝	+ ¼
Republic Iron & Steel	21½	21⅜	+ ⅛
Virginia I. C. & C. Co.	42	.....	.....
Westinghouse Electric	170	166	—4

Record of the Week.

Following is a daily review, showing the leading features of the week:

Wednesday, Aug. 16.—New York Central, owing to scarcity of stock available, advanced to 156, and the purchase of 10,000 shares of Union Pacific made it a feature of the day. While the market was firm, owing to the steadiness of the leading stocks, declines occurred in many stocks, due to profit taking. Money easier and started toward the interior.

Thursday, Aug. 17.—The trading was irregular though active, and stocks were strengthened by peace reports and crop prospects, many bears going over to the bull side, which gathered strength all day. Cash for financing crops is becoming a consideration. Steel stocks are firm with the leading railroads strong features, Lackawanna, however, breaking 10 points. Foreign news on grain reports is sending prices up. The total stock transactions of 1,211,700 shares marked the biggest day since May 22, and is the sixty-fourth 1,000,000 share day this year.

Friday, Aug. 18.—The upward movement of prices was checked by profit taking, but there has been no reaction, as the market is resting on a firm confidence in industrials and the harvests and is buoyed up by a strong foreign market. Rumors of railroad deals have livened speculation, and Union Pacific was dealt in heavily around 137. The bull traders continue active.

Saturday, Aug. 19.—Disappointing bank returns resulted in an uncertain market, but the close was firm, though a sharp setback was experienced with many industrial losses. A steadier tone prevailed with quieter trading and a more cautionary and conservative spirit.

Monday, Aug. 21.—A resumption of confidence and a moderate upward movement marked the day's trading with a continuance of the preponderating bullish sentiment. Money was easy and an especially good outlook in iron and steel trade remarked.

Tuesday, Aug. 22.—Trading was dull with the leading railroads less active. Reading, however, moved to a new high level. Reports of the peace negotiations are becoming less influential.

Financial Notes.

The initial semi-annual dividend of 3½ percent was paid on the stock of the National Rolling Mill, of Vincennes, Ind., recently. This is an excellent showing, considering the fact that the factory has been located in Vincennes only a year a half.

Contrary to the expectation of its stockholders the annual dividend of the National Enameling & Stamping Co. was passed by the directors at a recent meeting, causing considerable disappointment. As a result the common stock has dropped from 20⅞ to as low as 15, and the preferred has gone down from 88 to 86.

The Columbus Chain Co., Columbus, O., has asked its stockholders to consent to a reincorporation under the laws of Ohio. The company is now operating under a Delaware charter with a capital stock of $400,000, half common and half preferred. The change is contemplated owing to the removal of the double stock liability, which was enforced in Ohio prior to the last session of the legislature.

The directors of the Railway Steel Spring Co. have declared the regular quarterly dividend of 1¾ percent on the preferred stock, payable Sept. 20. Books close Sept. 8 and reopen Sept. 21.

The Rochester Railway & Light Co. has declared a dividend of 1 percent on its preferred stock, payable Sept. 1. Books close Aug. 18.

The directors of the Barney & Smith Car Co. have declared the regular quarterly dividend of 2 percent on the preferred stock, payable Sept. 1.

The J. A. Fay & Egan Co. has declared the regular quarterly dividend of 1¾ percent on the preferred and 1¼ percent on the common stock.

It is announced on the authority of President A. W. Thompson, that a meeting of the directors of the Republic Iron & Steel Co. will be held in Chicago, August 28, to consider the advisability of declaring a dividend on the preferred stock. No dividends on this stock have been paid since October 1, 1903.

The directors of the American Car & Foundry Co. will hold a meeting early in September to review the financial results of the first three months of the corporation's fiscal year completed July 31. The chief interest in the meeting centers about the amount of dividends on the common stock which will be declared.

The Colorado Fuel & Iron Co., announces that it began its new year July 1, with enough orders ahead to keep the plant busy for six months. The gross business of the year just closed was better than the year before, but not as good as that of 1902 or 1903.

BRITISH IRON TRADE REPORT FOR 1904.

J. Stephen Jeans, secretary of the British Iron Trade Association, has just issued the annual statistical report for the year 1904. The statement gave the following figures:

	1904 Tons	1903 Tons
Pig iron production	8,562,658	8,811,204
Bessemer steel ingots	1,781,533	1,910,618
Open hearth steel	3,245,346	3,424,083
Iron ore production	13,777,282	13,715,645
Iron ore imports	6,049,807	6,251,078
Tin plate production	519,000	453,000
Tin plate exports	359,000	293,000

Included in the open hearth steel output was 662,064 tons of basic steel in 1904, and in 1903 510,809 tons, showing an increase yearly for the past four years.

As mentioned in *The Iron Trade Review* recently the foreign iron and steel trade in 1904 shows a decrease of 912,543 tons in American imports of iron and steel from the total of 1903, and an increase of 815,010 tons in American exports of iron and steel. This change, it is observed in the report, was so violent as to react with considerable force on the British iron trade. Its effect would probably have been more keenly felt but for the fact that there was a falling off in German iron and steel exports in 1904 of nearly 700,000 tons from the total of the previous year, the decrease being chiefly in the finished material. The report concludes that the American iron trade has again entered upon a strongly competitive career and that the iron and steel manufacturers of Great Britain will continue to feel this competition.

The position of the four leading steel manufacturing countries in 1904 is shown by the statistics below, giving the production of both open hearth and Bessemer steel in gross tons:

	Bessemer	Open Hearth
United States	7,859,140	5,907,666
United Kingdom	1,781,533	3,245,346
Germany	5,853,754	2,782,944
France	873,381	559,121
	16,367,808	12,495,077

Official records show that in 1880 the total output of steel throughout the world was not more than 4,500,000 tons; in 1903 this figure had increased to 35,500,000 tons. In the same interval the world's output of pig iron increased from about 18,000,000 tons to about 46,500,000 tons. The increase in pig iron was thus about 28,500,000 tons, and in steel about 31,000,000 tons, the difference in increase being largely due to the displacement of puddled iron by steel. The output of puddled iron in Great Britain in 1904 was 936,228 tons, against 950,393 tons in 1903. The falling off was 14,165 tons, while in 1903 it was 37,885 tons from 1902. It is also noted that in Great Britain, as in most countries, the open hearth process is making relatively greater progress than the Bessemer.

The production of iron ore in Great Britain in 1904 was 13,777,282 tons, as compared with 13,715,645 tons in 1903. The imports in 1904 were 6,049,807 and in 1903 6,251,078 tons. Of manganese ores 205,175 tons were imported. The British coal output in 1904 was 232,411,784 tons, against 230,323,391 tons in the previous year.

The estimated production of tin plates in Great Britain in 1904 was 519,000 tons, against 453,000 tons in 1903. The exports in these two years are put respectively at 359,000 and 293,000 tons.

German Pig Iron Production.—The production of pig iron in Germany and Luxemburg in the first six months of this year was 5,098,588 metric tons as against 4,999,413 metric tons in the first half of 1904.

There was an increase in the production of basic iron from 3,174,401 tons in the first half of 1904 to 3,319,105 in the first half of this year.

NEW DIAMOND STATE STEEL CO. PROPOSED.

Interests connected with this concern, recently become bankrupt, have practically perfected plans subject to the approval of the creditors and stockholders of the Diamond State Steel Co., to form a new company, with ample capital, to take over the old concern, pay its debts, assume its bonded indebtedness and leave sufficient working capital to operate and extend the works. The new company is to have a capital of $3,000,000 common stock and $1,000,000 preferred, with a working capital of $500,000.

Wallace and Winchesters, receivers, are to act as attorneys for the promoters and announce that a bid in cash will be made to them sufficient to pay the unsecured debts of the company and other claims. Stock of the present company will be purchased at 12½ percent of par for the common and 33 1-3 percent for the preferred, payment to be made in common stock of the new company. Assenting stockholders will be given an opportunity to subscribe to the preferred stock of the company.

Good Prospects for Nails.

(Special Telegram.)

Cincinnati, O., Aug. 23.—Prices have been reaffirmed by independent nail mills. Better values and good business are anticipated.

A NEW MECHANICAL JOURNAL.—It would seem that the prophecy, first made about a decade ago, that the South was destined to become a great manufacturing section, particularly in the production of iron, steel and machinery, is rapidly materializing, if any significance can be attached to the establishment of new trade journals in that field. The latest trade paper reported is the *Practical Machinist*, of Atlanta, Ga., a substantial looking monthly, devoted exclusively to iron and steel working, machine construction and repairing, particularly in the South. This paper was established in the spring of the present year by The Machinist Publishing Co., at the head of which is Mr. J. A. Rasbury, well known from his connection with "Dixie" for several years as business manager.

The transfer of the Acme Harvester Co., of Peoria, Ill., to the Acme Harvesting Machine Co., incorporated under the laws of New Jersey for $2,000,000, was made last week. The directors of the new company are: D. R. Forgan, Chicago; G. H. Burr, New York; Ferd Luthy, Peoria; F. W. Garvin, New Jersey; R. C. Schaffner, Chicago. Mr. Forgan is president. The property has been in the hands of a committee of creditors since it became financially involved over a year ago and has now, the directors say, been placed on a sound basis.

The Sodemann Heat & Power Co., St. Louis, will build a foundry for the manufacture of radiators and other castings and also a boiler factory. The company has secured three acres in the east end of town and the plans for the buildings are about complete. When in readiness the plant will start with a force of sixty men.

Charles Shepard Beardsley died at his home in Auburn, N. Y., on Aug. 12, aged 91. He founded the firm of Beardsley, Keeler & Curtis, who successfully carried on foundry and machine shops, manufacturing steel tools of all kinds.

SWAN FOUNDRY.

A Large English Concern, Offered for Sale Without Bidders—News of Other Industries.

(Special Correspondence)

Birmingham, England, Aug. 8:—The "sale" of the Swan Foundry, West Bromwich, which I mentioned in my last letter, turned out a lamentable fiasco. There was a fair attendance of buyers, a circumstance mainly due to the fact that the fixture was timed to follow the usual meeting of the Iron Exchange, and took place in the adjoining hotel. The various merits of the establishment were duly emphasized by the autioneer, but there was not a single bid. This enterprising gentleman tried to stimulate buying by suggesting a figure. "Would anybody," he enquired, "be prepared to offer £10,000?" Nobody made any sign, though the figure quite commonly suggested as a fair value is £40,000. After an embarrassing interval, the works were withdrawn from sale. It is understood another effort will be made to sell them privately. The establishment is still being carried on for certain classes of work, though pipe casting has had to be given up as unprofitable. The inability to sell this venerable and extensive establishment by no means indicates stagnation in the foundry trade generally, as one well-known firm in the neighborhood, Messrs. Chas. Akrill & Co., are increasing their plant and shopping with a view to extended operations. Founders throughout the district are fairly busy, especially upon tramway joints for which the municipalities are making a great demand.

The continued heat is restricting production considerably in the South Staffordshire mills, but the works are fairly well employed, and though this has been bank holiday week, a number of the works commenced on Tuesday inght, and some even operated on Monday, disregarding the holiday. On the whole, the tone is hopeful, the general expectation being that when the demand from the agricultural districts sets in, as it will in the Autumn, there will be a brisk revival. Harvest prospects are excellent, better than for some years past and it is expected that the farmers will be good buyers of iron for fencing, roofing and other purposes. Makers of galvanized sheets have been able to declare an advance of 2s 6d per ton, making the figure £10 15s f. o. b. Liverpool. The recently formed association is having a remarkable run of prosperity, and so far has met with no check in its elevation of prices. Galvanized sheets during the six months ended June 30, totalled 198,947 tons, against 193,314 tons in 1904. The tendency is still upward. In this department A. J. Ash, a well-known Birmingham ironmaster, has recently acquired the Etna, Hecla and Tividale Sheet & Galvanizing Works, formerly owned by Mr. Wilcox,—fairly substantial evidence of hopeful prospects. The wagon works continue busy, and in connection with the development of the Metropolitan Amalgamated Works at Saltley, the firm has recently placed with Messrs. Thwaite Brothers, of Bradford, an order for seventeen steam hammers, varying in weight from five hundredweight to three tons. This is indicative of a largely increased business in the future.

Pig iron has acquired a little strength during the week, some Derbyshire houses getting sixpence advance. Their prices are now 44s to 45s. Northampton brands vary from 41s 6d to 43s, North Staffordshire 45s to 46s. In finished iron, marked bars are £8, common unmarked bars £5 12s 6d to £5 17s 6d, gas strip £5 15s to £5 17s 6d.

In the pig iron line new furnaces of larger output are gradually replacing the old. Messrs. Cochrane, of Dudley, are at present building a furnace which is to have an output of 1,700 tons weekly.

Two orders for high-class screw passenger steamers have just been placed by J. & J. Burns, with John Brown & Co., of Clyde Bank, and Scott & Co., Greenock, are building two steamers for Alfred Holt & Co., Liverpool.

Further substantial orders in the shipbuilding line are reported. A well-known firm of London ship-owners has divided an order for ten steamers of about 6,000 tons each among the following firms in the North of England: J. L. Thompson & Sons, Short Brothers, W. Pickersgill & Sons, all of Sunderland, and Readhead & Sons, of South Shields. Delivery must commence in April next and be completed by the end of the year.

Under a recent order by the Midland Wages Board, wages will continue for the next two months at 8s 6d per ton for puddling. This is merely following the North of England with an additional sixpence in lieu of Northern "extras," the Midland sliding scale at present being in suspense. The average selling price in the North of England was found to be during the two months ended June, £5 17s 6.92d, as compared with £5 17s 8.44d during the previous two months.

Our largest and most popular local ironmaster, Sir Alfred Hickman, M. P., for Wolverhampton, has just won a libel action at the assizes arising out of a labor dispute. In 1893 while the great coal strike was in progress, Sir Alfred ventured to declare that anyone who sent help to the Miners' Federation was the worst enemy of the miners. He stated, however, that he favored help being given to the children, and even to individual miners. In a recent political campaign a commission agent named Bevan ventured to paraphrase this declaration as follows: "No, I will not give them a penny; starve them into subjection!" For this equally malicious and garbled version Sir Alfred sued his assailant for slander. The case had not proceeded far before the defendant withdrew and apologized. Sir Alfred, however, who is one of the most generous of men, frankly undertook the costs of the action, in consideration of the fact that the defendant is practically without means.

STRONG SENTIMENT

In Favor of a Canadian Tariff Against United States and England.

Toronto, Canada, Aug. 21.—A banquet was tendered to W. K. George, of Toronto, president of the Canadian Manufacturers' Association, by the members of that body on the evening of Aug. 17 in recognition of his services on the occasion of the recent tour in Britain of a large party belonging to the association. The banquet was held at the National Club here and was attended by about 150 persons, George S. Drummond, of Montreal, presiding. The noteworthy feature of the occasion was the strong indorsement by the speakers of the position taken by Mr. George in his speeches in England as to the determination of the Canadian manufacturers to maintain a protective tariff against both the United States and England. Mr. George in replying emphasized this attribute, saying that Mr. Chamberlain had been given to understand that Canadians were going to make everything they could profitably produce, but that beyond that they preferred to divert their trade with the outside world into imperial channels. He stated that Mr. Chamberlain acquiesced in this idea. Mr. George claimed that the trip had placed Canada prominently before the British people and would result in an influx of immigration and capital. Since his return he had heard of seven representatives of English firms who had come to Canada to consider the advisability of starting branch factories.

The Plumbing & Heating Supply Co., Ltd., has been incorporated with head office at Toronto and a capital of $100,000. The provisional directors are Fred Armstrong, William Mansell and David Fasken.

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NEW IMPETUS TO RECIPROCITY.

With the adoption of resolutions advocating "immediate reciprocal concessions by means of a dual or maximum and minimum tariff," the National Reciprocity convention last week concluded its sessions at Chicago where representatives of more than two hundred commercial, agricultural and industrial associations from every section of the country united in an effort to preserve and increase the foreign markets of the American producer. Their recommendations,—brief business-like and to the point,—have given the necessary impetus to the reciprocity movement. A committee of fifteen will pursue the campaign and insist upon definite action by the next national legislature. They will place the issue squarely before the people, relying upon public sentiment, as reflected in Congress, to secure for them those concessions which have been systematically blocked of late years by a handful of high-tariff advocates in the Senate.

The discussions of the Chicago delegates were concerned little with a defense of the reciprocity system. They took the ground that its installation must be reckoned one of the natural steps in a nation's industrial growth. They merely declared that our present tariff system has served its purpose. Designed to protect to the American producer the home markets, it succeeded so well that he has been enabled, not only to supply the complete domestic demand. but to reach out gradually across the boundary, and place his commodities in foreign fields.

The protective tariff, it is generally admitted, has been one of the chief contributors to our present prosperity. But American markets are now securely ours: except along lines which cannot be produced in this country our imports are comparatively small: American ingenuity and vigorous business methods have given domestic industries protection more secure than that of tariffs: we are turning out vastly more than we can consume and the maintenance and enlargement of our markets abroad must be regarded as an object of natural concern.

The action of the Chicago meeting crystallizes into definite form a sentiment which has been growing steadily since President McKinley in his last memorable address said "we should sell everywhere we can and buy wherever the buying will enlarge our sales and productions and thereby make a greater demand for home labor. Exporters have been closely watching the trend of affairs since this great exponent of protection urged concessions to secure trade. They have seen our exports to France materially checked by retaliation duties there imposed: they have watched with alarm the building of a new German tariff system with only favors for our competitors in a rich market. Now in addition they are confronted with a surtax ranging up to the value of the goods in the event we engage in a tariff war against Germany.

Advocates of the dual tariff system disclaim any conflict with the idea of protection. There is neither intention nor willingness to subject the local producer to the dangers of foreign competition. Certain small interests will be harmed, for probably no tariff regulation was ever framed without working injury in limited fields; but their extent is not material and their loss only an incident in a great operation.

The nation's business interests have united in demanding better trade arrangements: the public, believing that industrial and commercial welfare means general prosperity, has rallied to their support: repeated declarations of the President have assured his loyal favor. In the face of these powerful forces, the "stand-pat" advocates must show unexpected strength if they are again to succeed in stifling efforts at tariff reform.

FINANCIAL REPORT OF CORPORATIONS.

A subject which has come to the front in the past few years is the proper method of presenting the financial results of the operation of large corporations. Always a question of interest it has become so particularly from the creation of so many large corporations and from the farther removal of the stockholders from active participation in the business. Not only this, but the modern practice of issuing large blocks of bonds has placed the bond in a different relation to the capital investment from what it formerly occupied, unless in the case of railroad corporations. The rather meager literature of industrial corporation accounting is practically silent upon the question of the proper handling of bonds. There are now many industrial corporations whose outstanding bonds constitute so important a proportion of the total capitalization, that it is not impossible to raise at least the question whether the bonds do not represent all the tangible assets. This introduces a new

element which old theories of accounting, however satisfactory for old conditions, can scarcely be expected to meet.

Another element has been introduced by the modern industrial corporations, which have been capitalized in preferred and common stock, without a serious claim that the par value of the common stock represents a tangible asset. By the general theory of accounting, it is held to be improper for a corporation to take credit for a profit which arises out of a revaluation of the fixed assets, and unnecessary for it to charge itself with a loss in a similar contingency. The popular feeling is that the large common and preferred stock companies have a plain duty of "making good" by improvements which shall eventually bring the real value of the tangible assets to an approximation of the face value of the securities outstanding. The system of accounting in vogue makes no provision for showing the stockholders whether or how this is being done.

Practice requires, on the other hand, that such a corporation shall start with a book valuation of assets relative to the face value of the securities, and not at all relative either to the current market value or to the real value, it being obvious to all that these may differ quite widely in either direction.

With a corporation strictly following all the requirements of safe accounting as at present recognized, there is no means available by which the ordinary stockholder can determine how well the corporation is proceeding to "make good" on its capitalization other than by a laborious summary of the charges for improvements which have been made from time to time out of net earnings or out of surplus.

The claim can be made that these large corporations are under no necessity of adding to the real value of their properties, without adding to the book value. Possibly they are not, but the fact is that they do. The successful ones make charges against net earnings, and out of surplus, for improvements. In some cases these charges appear large relative to earnings, but they are not at the same time necessarily large relative to total capitalization. That they do make such charges, is a tacit admission that it is desirable to make them, however much it may be denied that in theory they are necessary.

In analyses of the reports of the United States Steel Corporation the criticism is frequently made that the allowances for depreciation and extinguishment are small. They may appear small relative to capitalization, or even relative to earnings, but in accordance with the rules of accounting they are probably correct, providing it is admitted that the retirement of bonds constitutes an allowance for depreciation or exhaustion. The steel corporation distinctly states in all its annual reports that the appropriations for depreciation and extinguishment funds are made with the idea that, thus aided, the bond sinking funds will liquidate the capital investment in the properties at the expiration of their life. This theory is fully defensible, according to the recognized principles of accounting, but unfortunately it does not fit at all with the modern practice of molding the book value of the properties to the face value of the securities which have been issued.

It is in this practice that the modern industrial corporation introduces an element for which the accepted theories of accounting do not provide. An exhaustive paper read before the Congress of Accountants at St. Louis last September. by Arthur Lowes Dickinson, of two very prominent firms of accountants, may be taken as the latest and most complete deliverance by a recognized authority on "The Profits of a Corporation." The paper is quite exhaustive. occupying 33 pages in its printed form. yet it does not discuss this feature. Nor does it discuss the propriety of allowing the retirement of bonds to take the place of definite cash contributions to funds for depreciation and extinguishment. This latter subject is particularly interesting on account of the different varieties of bonds which can be issued. Thus there is the bond which provides that each year the same definite proportion of the original issue shall be bought and canceled, and the bond which provides that a certain proportion shall be bought each year, the interest on which shall continue and be used to purchase other portions. The former entails a continually decreasing burden, year by year. on the corporation issuing it. The latter entails the same burden each year until suddenly, at maturity. the whole issue. as an interest charge, is wiped out. Criticism can be made of this latter form, if its retirement is intended to make up for depreciation of plant or exhaustion of mineral or other property. for the reason that the charges are the same year by year, yet the property itself, to reach zero at the end of the bond period, must necessarily be depreciating year by year, although it must earn the same amount of money against the bonds each year.

Mr. Dickinson allows a manufacturing corporation more leeway in the ascertainment of current profits than the management of the United States Steel Corporation now sees fit to avail itself of, since he allows, under certain restrictions, the assumption of profits on partially manufactured goods before they have been actually sold. Since Jan. 1, 1904, the steel corporation has followed the absolute rule of not reporting, as profits of the corporation, the results of earnings made upon material which has not actually passed out of corporation control. Thus, where one subsidiary delivers to another subsidiary partly manufactured material on which it could not but claim profit had it been delivered to an outsider, the profit is carried into a separate account and not claimed as a profit of the corporation until the material has passed finally out of corporation control.

IMMEDIATE RECIPROCAL CONCESSIONS DEMANDED

BY THE CHICAGO CONFERENCE, WHERE MANY INTERESTS WERE REPRESENTED.

Loyalty to Protection Declared—Permanent Organization Formed—Stirring Speeches by Prominent Men.

(Staff Correspondence.)

CHICAGO, Aug. 21.—The first national conference for the promulgation of reciprocity sentiment among the people of the United States and in Congress was held in Chicago last week. Delegates from the four sections of the country, representing all manner of associations and industries—agricultural and commercial—were present, each one keen in the cause of tariff revision. The utmost enthusiasm marked every session. Significance and weight were given the meetings by the presence of three governors, one United States senator, several congressmen, and many other men of national importance in the various activities of the nation. The conference was nonpartisan to the extent that the delegates were chosen without regard to their political faith; but the denunciation of the "stand-patters" by men prominent in the councils of the Republican party, which was loudly applauded, is assurance that the reciprocity movement either has given birth to a new political party, or will receive more favorable consideration at the hands of the next Republican convention.

The conference had its origin at the last annual meeting of the National Livestock Association in Denver, when it was decided to invite the co-operation of the commercial and agricultural bodies of the country. The bogey of the agricultural interests is the new German tariff that will go into effect next spring against the nations that have not negotiated with Germany favorable reciprocity treaties. The United States has been the most uncompromising in this respect, and the duties on American exports, which are principally, in the case of Germany, cereals, rawstuffs and foodstuffs of every kind, have been increased between 50 and 360 percent. In the case of manufactures, especially those in which America excels, such as sewing machines, agricultural machinery, etc., the increase is between 60 and 110 percent. If the present tariff treaty is denounced, and it is fully expected it will be, the loss to this nation in export trade, will be between $40,000,000 and $100,000,000. This loss will fall principally on the agricultural interests of the West, and a desire to prevent this calamity if possible or the adoption of similar action by other nations, brought together the cattle men of Texas, the fruit growers of California, the sheep breeders of the Western slopes; the farmers of the Mississippi Valley, the cotton planters of the South, and the manufacturing interests of the East and Middle West to discuss reciprocity. All the speakers urged Congress to take immediate steps to prevent a national calamity so great as a tariff war with any foreign nation; and as a further preventative to this end, as Governor Cummins, of Iowa, put it, a tariff war of another kind will be carried into every congressional district of the nation—to convert the congressman, if possible; to defeat him, if not.

President McKinley's sympathy for the reciprocity movement and his historic speech—left as a legacy to the nation—in which he strongly advocated broad reciprocal relations with all nations, was frequently alluded to by the speakers; and the father of protection was held up to those inflexible adherents of the Dingley law, or "stand-patters," as they have come to be called, as the father of the reciprocity movement. Governor A. B. Cummins, of Iowa, dominated the conference, not alone by his native ability, but also from the fact that as sponsor of the original "Iowa Idea," he was recognized as the leading exponent of tariff revision. From the moment of his arrival, he breathed into the conference that magnetic inspiration which stamped him as the political leader of the movement. His presence and his words of defiance to the "stand-patters" contributed just the elements that were needed to mold the deliberating business interests into a militant political force. In his speech at Thursday's session, he rapidly dissipated any lingering sentiment binding the protectionists assembled to the rigid schedules of the Dingley act. Drastic revision sentiment was quickly crystallized and reciprocity was the synonomous term given it.

The sessions of the conference were held in the Illinois Theatre, Wednesday and Thursday, Aug. 18 and 19. Without any definite program at the commencement of what steps would be taken to accomplish the objects of the meeting, the conference closed with a declaration advocating immediate reciprocal concessions by means of a "maximum and minimum" tariff, and favoring the creation by Congress of a permanent commission of tariff experts to be appointed by the President to study the whole question of foreign trade relations and to recommend their findings to Congress for future action. A permanent organization was also formed, to be known as the American Reciprocal Tariff League, which through a national committee of fifteen, to be appointed later, will organize and spread the cry of tariff revision into all parts of the country.

The double tariff, which was the suggestion of United States Senator Cullom, was considered to embody reciprocity and retaliation in one, and its adoption by Congress is expected to open new markets to the producers of the United States. Reciprocity in the narrow sense of the term was laid to one side, and the discriminative tariff adopted because of the greater chance it would have of going through Congress. It will provide a low tariff to nations commercially friendly to the United States and will impose a prohibitive duty against those nations hostile.

Platform of Principles.

The complete platform of principles, as finally adopted, is as follows:

Whereas, The agriculture, manufactures and other industries of this country have expanded to such an extent that they can no longer depend upon the home market for the consumption of their entire product; and

Whereas, The export trade has become a vital support to many of our industries; and

Whereas, The present commercial attitude of the United States, largely owing to our failure to carry into effect the reciprocal trade provisions of section 4 of the Dingley law, is antagonizing foreign nations, whose good will we desire and on whom we have hitherto depended as purchasers of our surplus products; therefore

Be it resolved: 1. That this convention, recognizing the principle of protection as the established policy of our country, advocates immediate reciprocal concessions by means of a dual or maximum and minimum tariff as the only practical method at the present time of relieving the strained situation with which we are now confronted.

2. That eventually the question of the schedules and

items to be considered in reciprocal concessions preferably be suggested by a permanent tariff commission, to be created by Congress and appointed by the President, which shall consist of economic, industrial and commercial experts.

3. That it is the sense of this convention that our present tariff affords abundant opportunity for such concessions without injury to industry, trade or the wages of labor.

4. That we urge action upon Congress at the earliest time possible.

The Conference Organizes.

The conference was called to order by Alvin H. Sanders, of Chicago, editor of the Breeders' Gazette, who was largely responsible for the meeting. After reciting the history of the movement, he introduced John E. Wilder, president of the Illinois Manufacturers' Association, as temporary chairman. William R. Carwine, of the New York Merchants' Association, was elected temporary secretary, and Frederick Larrabee, of Iowa, assistant secretary. Later in the day, Stephen B. Packard, of Iowa, was elected permanent chairman, and permanent organization was perfected by the retention of the temporary secretaries. Addresses of welcome by Governor Deneen, of Illinois and Mayor Dunne, of Chicago, were followed by the appointment of committees on credentials, permanent organization and order of business.

Governor Mickey, of Nebraska, delivered the first address, which was followed by a discussion under the five-minute rule. He said in part: "We are discriminated against abroad in the sale of a number of our most important products, notably breadstuffs and provisions, and, second, we are maintaining toward the nations so discriminating against us a high tariff on certain of their important products—products which to little or no extent enter into competition with our own industries. We have tried retalliation, and that has failed because our interests affected are vastly more important than those to which we have addressed our retaliatory measures. As the saying is, we seem to be 'up against it,' and with more stringent foreign legislation pending, or about to be put in force, the situation is anything but promising."

Ex-Governor William Larrabee, of Iowa, said that while the protective policy had brought great prosperity to this country, other nations were realizing that such policies would bring prosperity to them and it had become necessary to have reciprocal relations and a "square deal" with other nations as well as our own people.

A speaker from Texas, emphasized the keynote of the meetings in the picturesque phraseology of the West, "that the 'stand-patters' are standing pat on a bobtail, and this convention is here to call the hand."

Protection for Foreign Markets.

A letter from John Kasson, who negotiated the reciprocity treaties bearing his name, and who is considered the greatest American authority on reciprocity, was read. We take from it the following:

"It is no longer a question of protecting our home market. That has been most effectively—and even excessively—accomplished. It is imperative now to protect our foreign markets. A glance at the official figures of our annual trade reports will show their importance not only to our farmers but to numerous classes of manufacturers which we are supplying to foreign countries.

"There are hundreds of millions of surplus productions, which we do not need and cannot consume at home. If the foreign markets are not kept open for them, if any one important market is closed to them, it will react upon the home market. Any extended closing of foreign markets would inevitably result in the collapse of our national prosperity.

"For it must be remembered that the home market for manufactures is dependent upon the ability of the people to buy. If the farmers become unable to sell their products at remunerative prices abroad, and their rejected surplus is thrown upon the market here, prices will fall greatly and their diminished income will compel them to buy less, and their consumption of all home manufactures will be reduced. It is indispensable to the continuance of national prosperity that we keep open the foreign markets for this surplus. And the same rule holds good in respect to our more limited exports of manufactured goods.

"It is as much the duty of Congress to vigilantly watch the interests of our agricultural and other exporting classes as it is to guard the interests of the class which supplies the home market with manufactures."

Senator Cullom's Address.

Senator Cullom called attention to the reasons that should be seriously considered before entering into a reciprocity treaty with Germany, and his remarks were followed with much interest, inasmuch as it was thought he was speaking for the administration. He said in part:

"Great Britain is our best customer. She buys twice as much of our products as Germany. The United Kingdom alone takes $537,000,000 worth of our exports, and the whole British Empire, including Canada, purchases annually from the United States nearly $800,000,000 worth of our products. Even for the entire German trade, we cannot afford to discriminate in favor of Germany as against Great Britain. If we should and could make a reciprocity treaty with Germany, favoring her products, would not Great Britain very justly demand that we grant concessions on the $165,000,000 worth of exports which she sends us, and would not Canada and British North America demand concessions on the $52,000,000 worth of exports which they send us?

"The question that confronts us now is, how are we to retain the markets we already have and to extend our large export trade by securing new markets? There are two courses which we might pursue. The first is to adopt on an extensive scale the policy of reciprocity. But if we cannot secure the ratification of reciprocity treaties, there is one other method that was considered seriously by the committee on foreign relations more than two years ago, when it became apparent that the reciprocity treaties could not be ratified, and that is the adoption of a maximum and minimum tariff. The adoption of this principle would not accomplish for our foreign trade all that reciprocity would accomplish. It would not open any very extensive new markets for our products; but it would prevent discrimination. A maximum and minimum tariff is more in the nature of retaliation; but something must be done, and if we cannot secure reciprocity I shall favor the enactment of an act of Congress providing a maximum tariff applicable to every nation that discriminates against our products."

Work of the Dingley Bill.

Eugene N. Foss, president of the Sturtevant Co., of Boston, and an expert of national renown on reciprocity, followed Senator Cullom. He said in part:

"The Dingley bill has largely done its work for the country. We all know under what circumstances it was conceived and enacted. It came at the close of one of the longest and most severe periods of depression the country had ever known. While the bill was, on the whole, the result of the best thought and investigation which limited time and a bare majority of the Republican party would permit, it nevertheless was full of inequalities and injustice. It has now been on the statute books eight years, and of necessity it has been outgrown in our rapid and unprecedented development. The Dingley tariff, as

it stands and as it has been applied, with its reciprocity element practically omitted, makes good business methods for the country impossible.

"During all the time I have been advocating reciprocity, I have insistently pointed out that when foreign retaliation for our excessive tariff came, it would strike the farmer first and hardest. We see something of the truth of this prophecy in the schedules of the new German tariff, which aim a blow at some 75 percent of American imports in Germany and threaten a loss of trade estimated at from $40,000,000 to $100,000,000 a year.

"Let the Chamberlain policy succeed in Great Britain, as it may, and thus complete the circle of hostile tariffs, and the talk that reciprocity is a sectional or an academic issue will cease. We all know that the whole fabric of our foreign trade is menaced by conditions which are not yet beyond our control. We know also that the demand at home for a revision of the tariff, notwithstanding that the politicians are doing their best to stifle it, is growing louder every day."

Resolutions Discussed.

Wednesday's sessions were devoted to a discussion of the resolutions offered by the committee on resolutions. In the former Gov. Cummins took an active part. His first appearance on the platform was greeted with hearty applause and his remarks were frequently interrupted by loud hand-clapping and shouts of approval. He said in part as follows: "Reciprocity has been damned with faint praise and with false friends long enough. The time has come to unmask, so that the people may know who stand for and who stand against this doctrine.

"The friends and advocates of reciprocity have passed through years of depression and discouragement, simply because it has been coddled in conventions and crucified in Congress. It has been eulogized in the abstract and condemned in the concrete. And the hour has arrived in which it is fair to ask those who are hostile to the policy to avow it. I am gratified beyond measure that in the course of this struggle there appears to be some sign now that those who fight it will come out in the open.

"It would be vain for me to recite the disadvantages under which the products of agriculture now labor in the effort to enter certain foreign markets, or to describe again the practical prohibition which seems likely to occur through the revised tariffs of the German Empire. The gravity of the situation is manfest, and it is acknowledged, I believe, upon all hands, that we must meet it in one of two ways—retaliation or reciprocity. The 'stand-patters' have raised the banner of the former, and we march to the music of the latter.

"I think it is pertinent in this conference and at this time to inquire what the policy of reciprocity is and what it involves. As I understand it, it is an adjustment of our tariff schedules, either by general law or special convention, looking toward an increase in the volume of our exports, and it matters not whether the object be accomplished by special convention or by general law.

"It is useless to attempt to close our eyes to the obvious fact that the efforts to introduce reciprocity as an effective policy of the Government have failed, because many well-intentioned, intelligent people have believed, and still believe, that it means the destruction of the system of protection to which the great majority of the voters are firmly, and I hope enduringly, attached. It is therefore worth our while to reflect a moment on this phase of the matter, for it is the real obstacle to the progress of reciprocity.

"As I understand it, the object of a protective tariff is to increase the sale of domestic products in domestic markets. The object of reciprocity is to increase the sale of domestic products in foreign markets. The measure of protection, as formerly defined, was the difference between the cost of delivering the product by the domestic producer in the domestic market, and the cost of delivery by the foreign producer in the domestic market. It was intended to equalize the conditions of production here and abroad, to offer a motive for the use of our own raw material, and to insure the employment of the maximum amount of labor.

"It was not originally intended to exclude competition, but rather to create competition. No foreign nation could justly complain of this equalization, and, so far as I know, no nation has ever complained of such a criterion for import duties. With schedules arranged with any fair regard for this definition of protection, reciprocity would be already secured, and retaliation would be the weapon with which to punish any country that refused to deal fairly with us. At the most, we would need treaties in very few instances to provide for unusual and extraordinary conditions.

"Our present schedules, however, are, in the main, intended to be prohibitive, if American products are sold at a fair and reasonable profit. It is only when, through combination or unusual demand, the home manufacturer lifts the price into the region of robbery that his foreign competitor can enter at all.

"There is no conflict, and can be none, between protection and reciprocity if we abandon the selfish interest of a particular producer or class of producers and ascend to the higher standpoint from which we may view the common welfare. The only justification for interference with absolute free trade is, first, to provide a revenue, and, second, to diversify and increase the products of the country, and it is just as essential and just as beneficial to our producers to preserve and enlarge their markets abroad as it is to preserve and enlarge their markets at home.

"The folly of maintaining a tariff schedule that will enable us to sell $1,000 worth of manufactured merchandise in our own markets, but which will prevent the sale of $10,000 worth of manufactured or agricultural products in foreign markets is so striking that it can only be explained upon the hypothesis that we have surrendered to a senseless fear of disturbing commercial tranquillity. Tranquillity is very desirable, but to be lasting it must be founded on industrial justice.

"Protection is not designed to narrow the field of American labor, and any duty that has the effect of lessening the domestic output is not in harmony with the policy out of which it springs. The theory of the modern 'stand-patter' appears to be that there shall be a prohibitive duty laid upon the imports of everything that we can, by hothouse methods, produce, and then if any nation presents this embargo upon trade, high statesmanship requires us to punish that nation by raising the prohibitive duty still higher. It seems to me that the doctrine of protection does not demand a prohibitive duty on anything, nor does it demand an equalizing duty upon everything.

"The demand we make is not new. The men who today are the exponents of the 'stand-pat' theory of government are not protectionists; they are exclusionists.

"Much has been written in recent years about reciprocity in competitive products. The 'stand-patter' asserts that there can be no reciprocity in such commodities without doing violence to the doctrine of protection. When the Dingley act became a law the power was conferred upon the President to enter into reciprocal arrangements with any country, permitting free importation of argol, crude tartar, wine lees, crude brandies or other spirits, manufactured or distilled from grain or other materials,

champagne and all other sparkling wines, still wines and paintings and statuary.

"It further gave the President the power to enter into treaties by and with the advice and consent of the Senate and the approval of Congress, for reciprocity in all products, competitive or otherwise, for a period not exceeding five years, with this limitation—that the duties of the Dingley law must not be reduced more than 20 percent.

Cites McKinley Treaties.

"McKinley appointed a commissioner to negotiate treaties in competitive things under this act, and, as I remember it now, seven were concluded and submitted to the Senate with his approval. The most important was the treaty with France, which was intended to remove, in the main, the discrimination under which our producers enter the markets of that country. There the treaty has remained, from that day until this, without even a discussion as to its merits. We now enter the markets of France under a maximum tariff which is 25 percent higher than that paid by most of our competitors.

"Gratifying as the development of our manufacturing interests has been, it is still true that agriculture is the dominant factor in our commerce. With very trivial exceptions, the protective tariff has not directly benefited the agriculturists of the United States, but it has indirectly very greatly aided them in the creation of a demand for their products. The duty to find for these producers the best and widest markets is as high and as sacred as the duty to protect our manufacturers against foreign invasion. And yet, although we have built up the most complete and drastic system of exclusion ever known in the history of the world, we have not a line or a letter in law or treaty which has for its object the protection or the enlargement of the markets that the farmer is seeking. We are already excluded in great measure from France, we are about to be shut out of Germany, and when it is proposed to consider whether there be not some fair and just way to avoid the disaster the leaders of the 'stand-patters' with one acclaim cry out, 'If Germany does this thing we will expel her from our shores by the enactment of still higher retaliatory tariffs.'

"May I ask, in all humility, how this battle of tariff will help our farmers? What they want is the continuance of their market in Germany, and while we may avenge the national honor as viewed by certain leading statesmen by excluding German imports, under what treaty of peace will the producers of our meats and breadstuffs be indemnified or reimbursed for the cost of the war? The subtle suggestion that this session of Congress is too short, or that one too busy; that this session is too near an election, or that one too remote, should no longer be accepted. There is just one time to begin a righteous reform, and that is now.

"Every hour of McKinley's presidency increased his solicitude for our foreign markets, and his last words are so filled with concern lest we should miss the ripe opportunity to deal rationally with the nations of the earth, and they breathe so fervent a spirit for the enlargement of our foreign commerce through the reduction of tariffs, that I marvel at the audacity of the 'stand-patter' who takes refuge behind his revered and sainted name."

Several other speakers followed Gov. Cummins under the five-minute discussion rule, after which the report of the committee on resolutions was brought up. Several proposed changes developed spirited debate and considerable friction, but the resolutions were adopted substantially as submitted. Some wanted the "maximum and minimum" tariff clause amended to read "that this convention advocates reciprocal concessions by the most adequate and practical method of relieving the strained situation with which we are confronted either by reciprocity treaties or a maximum and minimum tariff." Others wanted the national committee of the permanent organization increased from fifteen to include a representative from each State and Territory. Both arguments, however, were lost. The conference afterwards adjourned sine die.

Probable Effects of the Conference.

Eugene N. Foss, the Boston leader of the reciprocity convention, replying to the question, "What is your impression of the reciprocity convention and its probable influence on the future of the movement?" said last evening:

"I think the delegates from Massachusetts were most impressed with the great size of the convention and the character and ability of the delegates. Every man seemed to understand himself and to be thoroughly in earnest. With men of this sort in attendance, of course it was self-evident that decisive steps would be taken.

"I was impressed also with the fairness and readiness to yield individual opinions in the common interest shown by the delegates. The convention was full of democratic spirit. There was nothing cut and dried.

"The platform is businesslike, short and right to the point. I don't see how the convention can fail to make a profound impression upon the whole country and inaugurate a campaign which will result in practical legislation.

"We from New England, who have been more actively engaged in this reciprocity work than the people in the West, are particularly gratified to find the West awake to the gravity of the situation. Our manufacturers have seen it coming for a long time. Now that the agricultural interests have joined hands with us, something must come of it. The educational work which will be done through the permanent organization of the American Reciprocal Tariff League soon will crystallize public opinion so that Congress will see the wisdom of taking speedy action."

"The only result I hope for from this conference," said Gov. Cummins, of Iowa, "is the awakening of public sentiment throughout the country. That is the most valuable result that could be achieved right now. When it comes to the work in the States, it is going to be purely political. I shall do the best work I can in my party."

Pleased with Results.

"The convention has been a huge success," said former Senator Harris, "and it proves conclusively that there is a demand for tariff revision throughout the United States. Our business will be to force Congress to understand in unmistakable fashion that such a demand exists. We must work on Congress. The convention was a notable gathering because of the high character and business standing of the men composing it. They represented a tremendous array of business interests."

Mr. Sanders agreed with Senator Harris. "The whole affair has been a big success," he said. "The class of men brought together has been splendid. The Eastern deledates were amazed at the representative nature of the assemblage commercially. The delegates have been in earnest and big, practical things will be done as a result of the conference. The convention means that a new vital force has entered American political life—I refer to the slogan of tariff revision.

"This now is a live issue, and the demand for changes in the tariff cannot hereafter be ignored. The delegates seemed thoroughly pleased with the conference. A big campaign for the accomplishment of the aims of the convention will now be undertaken."

Chairman Packard said: "Interest in tariff revision is now proved. The movement will keep on growing and spreading. The conference was a success."

Plant of the Phillips Sheet and Tin Plate Co.

The Phillips Sheet & Tin Plate Co., located at Clarksburg, W. Va., was organized by the late James R. Phillips, who was killed in the Harrisburg wreck last spring. Mr. Phillips was formerly in charge of the Pittsburg district of the American Sheet & Tin Plate Co. and with him was associated E. T. Weir, who had been general manager of the Monessen mill for the same company.

These gentlemen purchased the plant of the Jackson Iron & Tin Plate Co., at Clarksburg, and made extensive improvements in it. Among the improvements were the addition of a bar shearing department, an addition of 100 ft. to the main structural building and the erection of a new assorting room, 150 x 65 ft. A new office was also built, and in the mills, locations of the cold rolls were changed, these being placed in the new addition to the main building. Many other minor changes were made, so at present the works is one of the most complete and modern plants in the country. The plant has eight hot mills and all finishing departments are of sufficient capacity to handle the production from the mills. It is probable that several more hot mills will be added to the present train.

The plates from the time of their entrance to the mill until they leave the white pickling are handled entirely by a series of electric cranes which extend throughout the shops. The fuel used in the mill is exclusively gas, Clarksburg being now one of the greatest gas districts in the country. By using gas not only is economy in operation secured but also production of first-class material is assured.

Two sheet mills were originally operated by the company. These, however, have been changed and the plant is now operated entirely on black plates and coke grade of tin plates.

The motive power for all the eight mills is furnished by two Corliss engines of 1,000 h. p. each. The engine installed in the cold mills is 1,000 h. p. capacity, and the machinery in the pickling, annealing and tin plate departments is all of the most modern type. Steam is furnished by a boiler plant consisting of five McNaull water tube boilers of 400 h. p. each. The company operates its own electric plant and pumping station.

The power transmission in the eight hot mills is by means of rope drives. These drives are shown quite clearly in the illustration as are also the engines driving the mills.

The works are located on the main line of the Baltimore & Ohio railroad, thus insuring quick delivery to the Eastern canning markets. At present the works are being operated in full, giving employment to about 600 men. In connection with the tin plate company the Phillips Improvement Co. owns 300 acres of land and about 40 houses near the mill proper. It is the intention to erect additional houses during the coming autumn. The street car line of Clarksburg has been extended to this property and a large settlement is springing up around the works. The operation of the mill is of

FIG. 1.—WORKS OF THE PHILLIPS SHEET AND TIN PLATE CO., CLARKSBURG, W. VA.

FIG. 2.—PARTIAL VIEW OF HOT MILLS, PHILLIPS SHEET AND TIN PLATE CO.

FIG. 3.—PARTIAL VIEW OF ANNEALING FLOOR, PHILLIPS SHEET AND TIN PLATE CO.

great benefit to the city of Clarksburg, about $25,000 monthly being paid in wages.

The operating department at Clarksburg is under the direction of E. T. Weir, secretary and general manager; the sales department of the company is under the direction of W. H. Baldridge, vice president, who is located in the Whitehall building, New York city. The other officers are: Paul D. Bogle, treasurer; D. M. Weir, purchasing agent, and John C. Williams, superintendent.

We present herewith a number of views of the mills. Fig. 1 shows the exterior of the plant. Figs. 2 and 3 are interiors

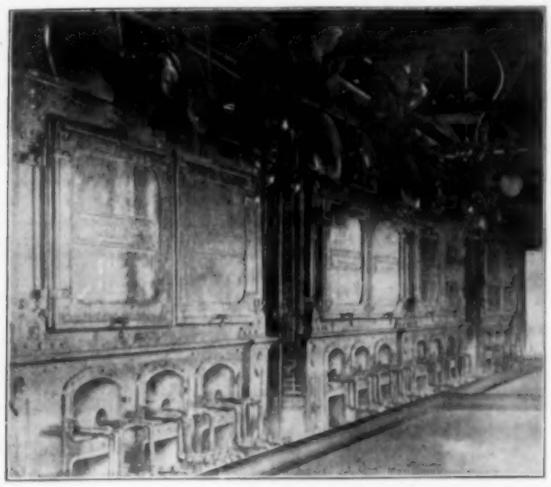


FIG. 4.—BOILER ROOM, PHILLIPS SHEET AND TIN PLATE CO., CLARKSBURG, W. VA.

showing respectively partial views of the hot mill and of the annealing floors. Fig. 4 is the interior of the boiler room. In this illustration will be seen the gas main for supplying gas fuel to the boilers, and also the arrangement of pipes to each boiler. The cleanliness of the boiler room, in comparison with those equipped with coal fired boilers, is noticeable.

BOOK REVIEWS.

Practical Alternating Currents and Alternating Current Testing, by Chas. F. Smith. Manchester, England. Scientific Publishing Co. Cloth. 5¾ x 8¾ in. 437 + xxi. pages; 204 illustrations. Supplied by *The Iron Trade Review* at $1.75.

This book appears to be a distinct addition to the literature dealing with alternating currents. It deals in an elementary and practical manner with the principles of alternating currents and alternating current machinery. The scheme of the book is unique. While intended to be a text book on the subject, it is also written as an instruction book for the laboratory, and in each chapter principles and descriptions of the various machines taken up in that chapter are given in the first part. The second part of the chapter is devoted to laboratory and shop tests of these machines. The discussion of the principles and the descriptions of the machines are given in clear language and are well illustrated. The tests and experiments to be made are illustrated with diagrams and definite instructions regarding the method of connecting up the various apparatus are given, together with methods of taking readings. IImmediately following the instructions the calculation of the results of the experiment is discussed and comments are made on the experiment, and various other methods by which the same results have been accomplished are shown.

The book deals with a large variety of subjects and practically covers the entire field of alternating current machinery. Various experiments are arranged to illustrate impedance, power-factor and power of an alternating current, the effect of capacity, the transformer, alternators, synchronous motors, polyphase circuits, the rotary converter and the induction motor.

The book is remarkably free from higher mathematics, which are necessarily confusing to a beginner in the subject. The reader with a mathematical turn of mind, however, will find all the mathematics he desires in the last chapter of the book which is devoted to the analyses of alternating curves. This chapter is purely mathematical and will be skipped by the great majority of readers.

Geology of Western Ore Deposits, by Arthur Lakes, Denver, Colo. Kendrick Book and Stationery Co. 6 x 8¼ inches. 415 pages, illustrated with charts and folders. Supplied by *The Iron Trade Review* at $2.50.

The writer is eminently fitted to treat the subject chosen, as he has lived in the region for many years, has filled the chair of geology at the Colorado School of Mines, and acted as western editor for *Mines and Minerals*. The first edition of the book was published about ten years ago, under the title of Geology of Colorado and Western Ore Deposits. This edition was quickly exhausted, and the writer has now thoroughly revised it and brought it up to date, making use of the large fund of information which he has gathered in the intervening years. The first chapter deals with geology in general, and especially with the different formations present in Colorado. The second chapter deals with lithology, treating especially of the igneous rocks of the territory covered in the work. In the succeeding chapters the writer illustrates the various geological phenomena which have led to the formation of ore deposits for which the state is so famous. Mr. Lakes has a happy faculty of making general outline sketches showing the principal points of interest in a panorama or in any piece of scenery, and the work abounds in illustrations of this kind. One point worthy of mention is that where it is necessary to refer to an illustration at different points of the book which are widely separated, the author has repeated the illustration so as to bring the picture close to the text referring to it.

For instance, some of the cuts used for showing general geological features are later repeated in connection with descriptions of Pacific regions or mining camps. This time the scope of the book has been broadened to take in the ore deposits of the entire Pacific Northwest, including Alaska. At the end of the work there is a glossary covering 22 pages.

This work will be found of interest not only to geologists but to all tourists and pleasure seekers who visit the wonderland of mountains, many of the secrets of which are revealed by this little work.

Ingenious Tempering Device.—The Skinner Chuck Co., New Britain, Conn., has a clever arrangement for tempering the tips of the steel jaws of small chucks which has attracted visitors from all parts of the state. The pieces of fine steel are raised to a high temperature in a tiny muffle furnace occupying less than a square foot of space and heated by electric current from the power plant. The operator sits conveniently near upon a stool beside a window and in a shallow vessel draws the temper with the minimum of exertion and loss of time. There is no dust or ash, no noise and no discomfort.

Large Contract for Elevators.—James Stewart & Co., of Pittsburg, have secured contracts for the construction of steel and concrete elevators at Buffalo and Montreal, which will require between 5,000 and 6,000 tons of structural material. The Buffalo contract is with the American Malting Co., for a 2,000,000 bu. elevator on Buffalo river. The Western Canada Milling Co., will build a 1,000,000 bu. elevator at Montreal.

THE ORGANIZATION AND ADMINISTRATION OF NATIONAL ENGINEERING SOCIETIES.*

BY JOHN W. LIEB, JR.

The most important factors in promoting the advance of the engineering profession, and in disseminating and rendering available to the world the valuable experience and data accumulated by engineers, are the professional associations or national engineering societies. The importance of interchange of data, and results of observation and experience, was realized long before the practice of engineering had been exalted to the dignity of a profession.

The first important step for associating engineers into a professional body was taken in 1828 by Thomas Telford, who applied for a royal charter for the Institution of Civil Engineers, of Great Britain, in the name of 156 of his colleagues, some of whom had already formed a society as early as 1818. The original charter recites that the body is formed: "for the general advancement of mechanical science, and more particularly for promoting the acquisition of that species of knowledge which constitutes the profession of a civil engineer, being the art of directing the great sources of power in nature for the use and convenience of man, as the means of production and of traffic in states both for external and internal trade, as applied in the construction of roads, bridges, aqueducts, canals, river navigation, and docks for internal intercourse and exchange, and in the construction of ports, harbors, moles, breakwaters, and lighthouses, and in the art of navigation by artificial power for the purposes of commerce, and in the construction and adaptation of machinery, and in the drainage of cities and towns."

It will be seen that this comprehensive, and now historic, definition of the field covered by the profession of the civil engineer, as formulated by Tredgold, includes broadly all branches of modern engineering science, except military engineering, and, directly or by implication, includes within its scope mechanical, mining, electrical, and sanitary engineering, and naval architecture. It was long before important discoveries in the realm of physical science, and epoch-making inventions and improvements in the mechanical arts opened new fields of industral activity, which broadened the field covered by the engineer, and were reflected in a differentiation of the profession, resulting, in Great Britain, in the organization of the Institution of Mechanical Engineers in 1847, the Iron and Steel Institute in 1869, and the Society of Telegraph Engineers and Electricians in 1871, which, in 1889, became the Institution of Electrical Engineers.

Coming now to our own country, the American Society of Civil Engineers was organized in 1852, the American Institute of Mining Engineers in 1871, the American Society of Mechanical Engineers in 1880, and the American Institute of Electrical Engineers in 1884. While these are the distinctively national engineering societies, there are other technical associations although of national importance, do not come within the scope of this address.

In this review we shall confine our attention to the four national engineering societies first referred to, with some reference to the corresponding bodies in Great Britain and on the Continent.

The membership of these bodies, divided into classes according to the last official reports, is given in the following table; as a matter of general interest there is also added a corresponding tabulation of the more important European engineering societies.

* Abstracted from the presidential address presented at the twenty-second annual convention of the American Institute of Electrical Engineers, Asheville, N. C., June 19-23, 1905.

A study of the annual reports of these bodies and of their constitutions and by-laws is of considerable interest, as showing their progressive expansion, growing influence, and higher professional standing from year to year, and the lines along which these developments take place. We shall not undertake a retrospective analysis, however, but rather confine ourselves to a comparative study of the methods of organization and business administration of the four national engineering societies, as revealed in their last annual reports.

One of the first questions we encounter is the grades of membership, then the requirements of admission to them, and the method of election. These questions are of fundamental importance and are worthy of the closest attention because upon them more than upon any other feature of the organization must depend the professional standing of the society and its healthy growth in membership and influence. There is no honor within the gift of the society that requires the exercise of so much judgment, such fidelity to its interests, such conscientiousness, impartiality, and impersonality as

FOREIGN ENGINEERING SOCIETIES.

Name and Date of Organization	Date of Report	Honorary Members	Full Members	Associate Members	Associates	Total
Institution of Civil Engineers (of Great Britain) 1818	Jan. 1, 1905	19	2191	4116	271	*6597
Institution of Mechanical Engineers, 1847	Mar. 1, 1905	9	2351	1545	72	†3977
Iron and Steel Institute, 1869	Jan. 1, 1905	11	1898	....	....	1909
†Institution of Electrical Engineers, 1880	Aug. 31, 1904	6	*1101	1435	1761	‡4303
Verein Deutscher Ingenieure, 1891	Apr. 24, 1903	6	17543	....	....	17549
Société des Ingénieurs Civil de France, 1848	1901	..	.....		....	3691

*Includes 136 foreign members.
*Not including 1144 students or graduates.
†Originally organized as the Society of Telegraph Engineers and Electricians in 1871.
†Not including 450 students or graduates.
‡Not including 1107 students or graduates.

NATIONAL ENGINEERING SOCIETIES (U. S.)

Name and Date of Organization	Date of Report	Honorary Members	Full Members	Associate Members	Associates	Junior Members	Total
American Society of Civil Engineers, 1852	Jan. 1, 1905	9	1795	903	127	*367	3203
American Institute of Mining Engineers, 1871	Jan. 1, 1905	7	3483	....	190	....	3680
American Society of Mechanical Engineers, 1880	Jan. 1, 1905	19	1915	..	237	609	2780
American Institute of Electrical Engineers, 1884	Jan. 1, 1905	2	481	2851	....	....	3334

*Including 27 fellows.

membership on the board of examiners or committee on admissions, and it is deserving of the highest recognition.

The requirements for honorary membership demand no lengthy discussion, as the practice of all societies is essentially identical in this respect.

The requirements for full membership vary greatly in the four societies, as we shall see from abstracts from their constitutions.

AMERICAN SOCIETY OF CIVIL ENGINEERS.

CONSTITUTION—ARTICLE II—MEMBERSHIP.

2. A member shall be a civil, military, naval, mining, mechanical, electrical, or other professional engineer, an architect or a marine architect. He shall be at the time of admission to membership not less than thirty years of age, and shall have been in the active practice of his profession for ten years; he shall have had responsible charge of work for at least five years, and shall be qualified to design as well as to direct engineering works. Graduation from a school of engineering of recognized reputation shall be considered as equivalent to two years' active practice. The performance

of the duties of a professor of engineering in a technical school of high grade shall be taken as an equivalent to an equal number of years of actual practice.

AMERICAN INSTITUTE OF MINING ENGINEERS.

CONSTITUTION—ARTICLE II—MEMBERS.

Sec. 3. The following classes of persons shall be eligible for membership in the Institute; namely, as members all professional mining engineers, geologists, metallurgists or chemists, and all persons practically engaged in mining, metallurgy or metallurgical engineering.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

CONSTITUTION—MEMBERSHIP.

C. 9. A member shall be thirty years of age or over. He must have been so connected with engineering as to be competent, as a designer or as a constructor, to take responsible charge of work in his branch of engineering, or he must have served as a teacher of engineering for more than five years.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.

CONSTITUTION—ARTICLE II—MEMBERSHIP.

2. A member shall have been an associate, and at the time of his transfer to membership he shall be not less than twenty-seven years of age, and shall be:

a. A professional electrical engineer; or

b. A professor of electrical engineering; or

c. A person who has done important original work, of recognized value to electrical science.

3. To be eligible to membership, as a professional electrical engineer, the applicant shall have been in the active practice of his profession for at least five years; he shall have had responsible charge of work for at least two years, and shall be qualified to design as well as direct electrical engineering works. Graduation from a school of engineering of recognized standing shall be considered the equivalent of one year's active practice.

4. To be eligible to membership as professor of electrical engineering, the applicant shall have been in responsible charge of a course of electrical engineering at a college or technical school of recognized standing for a period of at least two years.

In the case of the mechanical engineers and the civil engineers the election is by ballot of the membership at large after approval by the executive board or council; in the case of the mining engineers and electrical engineers, election is by direct vote of the board of directors, in the latter after submitting the names to the membership at large, in the former without such submission. In the mining engineers, mechanical engineers, and electrical engineers the application is first passed upon by the board of examiners and then by the executive board or council; in the case of the civil engineers it is passed upon by the board of directors without action by an examining board. The electrical engineers' constitution requires that all members shall first be elected as associates, and then transferred by the board.

It will be seen from the above how different are the requirements for full membership in the several societies, and how varied is the procedure for election. It would seem at first thought that the more explicit the constitution in its exact definition of the conditions for membership the easier it would be for the membership committee to act, but this is by no means always the case, as it often prevents taking a broad view of the candidate's eligibility and is liable to exclude desirable material on technical grounds, although on the other hand it is a protection against loose interpretation of the requirements by careless examiners. It would seem that a better division of responsibility and a more direct control of the class of men admitted to membership ought to result by giving wide publicity to their candidacy and election by ballot of the membership at large after candidates have passed the scrutiny of the board or an examining committee. A young society covering a branch of engineering that has but recently become specialized can not in the beginning impose rigorous requirements as to age limit or time of professional service, and the branch of engineering may be such as to make it difficult to impose severe technical requirements.

In the case of the civil engineers the accepted definition is sufficiently broad to cover applicants who are professionally engaged in any of the other branches of engineering; the mechanical engineers' definition is somewhat less comprehensive; that of the mining engineers is still less so, while that of the electrical engineers is really restrictive to professional electrical engineers.

We now come to the consideration of the other grades of membership, associate membership, associates, juniors, etc. It would lead us too far afield to treat each grade in full and we shall confine ourselves to some general observations. It is necessary to provide one or more grades for young men just entering professional life through which they can rise, as they acquire experience, to the dignity of full membership; but it is necessary also to provide for another class of men who, though not professional engineers, nevertheless cooperate with them, and conduct engineering works, while at the same time acting as executive heads or business managers. To such men, eminent in the particular branches of activity, it is humiliating to be placed permanently in an inferior grade of membership with the beginners in professional service; the situation could be satisfactorily met by establishing the grade of associate, junior, and associate membership, to represent successive steps in the advancement to full membership, the associates forming a class by themselves.

We now come to the question of dues, and at the same time we may with advantage consider the general question of income and expenses, or the cost of conducting the business of the societies.

The expense of membership in the several societies is as follows:

	Entrance Fees			Annual Dues			Foreign	
	Juniors	Associates	Members	Juniors	Associates	Members	Associates	Members
American Society Civil Engineers	$10	$20-25	$30	$10-15	$10-15	$15-25	....	....
American Institute Mining Engineers	....	10	10	.....	10	10	....	....
American Society Mechanical Engineers	15	25	25	10	15	15	....	....
American Institute Electrical Engineers	..	5	15	.....	10	15	5	10

In view of the new relations entered into between the three national engineering societies that are to occupy jointly the Union Engineering Building, and as they now have roughly about the same membership, it would seem desirable to have membership dues as nearly uniform as practicable.

Let us now consider the annual receipts and disbursements per paying member per year in the four societies. The figures on the next page are presented purely as a matter of general interest and not at all for the purpose of invidious comparison; the table of receipts and disbursements per member is subdivided under appropriate heads as accurately as they can be compiled. These figures do not include extraordinary receipts and disbursements, but, as far as can be learned, from the annual reports, they cover only the regular and ordinary items of income and expenditure.

It should be borne in mind that no deductions of value can be drawn from a comparison of these figures alone. Take the cost of the transactions for instance; in order to make a comparison of the relative economy with which this item is handled in the several cases, it would be necessary in each

instance to know the number of pages and cuts, and the number of advance copies distributed at meetings, or monthly advance publications sent to members in addition to the regular annual volumes. The figures therefore represent the amounts which are being spent on the several items, rather than a comparison of their economic handling; it would be fallacious to assume that the figures necessarily represent the comparative economy with which the societies conduct their affairs as indicated by the items in the table.

RECEIPTS AND DISBURSEMENTS PER YEAR PER MEMBER.

RECEIPTS

	Civil	Mining	Mechanical	Electrical
Entrance fees	$ 2.59	$ 0.28	$ 2.45	$ 0.83
Dues	16.99	10.64	14.04	9.30
Transactions, sales and advertisements	1.86	2.09	1.64	1.70
Badges and certificates	.65	.....	.....	.28
Interest	.36	.34	.....	.21
	$22.45	$13.35	$18.13	$12.32

DISBURSEMENTS

Transactions	$ 4.63	$ 5.28	$ 7.50	$ 3.77
Salaries, etc	6.13	4.22	3.99	2.20
Meeting expenses	.29	.30	.94	.82
Library, including rent and salaries	.30	.80	.39	.81
Rent	2.84	.74	2.79	.75
Stationery and miscellaneous printing	.62	.34	1.19	.70
Postage	1.10	1.02	.26	.66
General expenses	.34	.47	.11	.54
Badges and certificates	.50	.....	.33	.25
Express	.....	.83	.....	.22
Totals	$16.75	$14.00	$17.50	$10.72
Credit balance per member	5.75	.95	.63	1.60

Our next concern is with the officers of the societies and the methods of nominating and electing them. A truly national society should draw its membership from all parts of the country, and should afford representation, through its officers and those on its administrative committees, to the membership at large; in other words, it should select its officers as far as possible with a view to their geographical distribution. It is admitted that this plan is difficult owing to the opportunities afforded to practicing engineers by large enterprises, whose administrations, technical as well as financial, are generally located in the important commercial centers. For this reason the important groups of members are found in the large cities, and from them are drawn the majority of the officers, such selection being emphasized by the necessities of the central administration of the society. This procedure is liable, however, to operate to the disadvantage of candidates qualified for the important posts of honor within the gift of the societies that are open to be stationed some distance away from headquarters. To keep the Institute on the plane of national standing it should have a care to the broad geographical distribution of its officers. This end can best be accomplished by having a nominating committee, the several members of which are respectively selected from the same number of geographical groups of members of the society, each group to consist of, say, 300 or 400 members. Upon this committee, in consultation with a number of past officers, should rest the selection of past officers, and should rest the selection of the official nominees. Provision should also be made for the filing of such nominations as may be made directly by the general membership. This procedure was introduced by the American Society of Civil Engineers several years ago. Such a plan would provide geographical representation and at the same time discourage unseemly electioneering and advertising by circular for the coveted posts of honor.

It will be admitted by all who have had experience in the administration of professional societies that it is desirable to eliminate every tendency toward political agitation in connection with the election to honors within the gift of the membership, and to concentrate every effort upon advancing the professional standing of the society and the interests of its members. It would also seem of advantage to have the fiscal year coincide with the calendar year; this would lengthen the time between the annual meeting and the annual convention, and by spreading the time taken by the former over several days a larger attendance of the out-of-town members would be secured for the annual business meeting and the annual banquet, or for other functions which could be held in the time available. The annual meeting, as held at present, is not markedly distinguished from the other monthly meetings, and there is usually only a month between it and the annual convention. With the growing importance of the financial interests confided to the care of successive administrations the yearly business meeting should receive more attention, and the membership at large should participate in them to a greater degree than is the case at present.

The administration of the societies should be in the hands of their board of directors or councils, and similarly the important standing committees, in whose hands rests the conduct of affairs in the several branches of administration, should be committees of the board or council. Such being the case it is desirable that their appointment should, in the beginning, rest with the board itself, and that one member of each standing committee should retire each year, and the new president fill the vacancies.

It is also desirable to avoid constant changes in the personnel of such important committees as the finance, library, and membership committees; provision should be made for standing committees of three or five members, with one member retiring each year, the vacancies to be filled by the incoming president. This plan secures continuity of policy, gives the committees the benefit of accumulated experience and relieves the president of the responsibility of making a large number of appointments on entering his term of office. Such standing committees as the finance, membership, library, publication, and meetings committees, or the last two consolidated into one, are necessary for all societies, together with such other committees as the particular field covered by the work of the society may require. Outside of the standing committees required by the regular routine, it is desirable to avoid as far as pacticable the appointment of special or tempoary committees, and when the special work assigned to them has been performed, such committees should be discharged. Nothing is more subversive of effective and energetic administration than board meetings at which an interminable series of committees make "no report" or the chronic "report of progress."

In case it is considered inadvisable to appoint a separate committee on meetings, or on papers and meetings, and a committee on publications, or editing committee—a division of work which becomes necessary when monthly meetings are held with readings of papers and discussions, in addition to one or more annual meetings—it becomes necessary to define their respective responsibilities very clearly, placing upon the committee on meetings, or papers, the responsibility of accepting papers or communications for presentation at the meeting, and upon the publication, or editing committee alone, the responsibility for the publication of papers and discussions, in whole or in part, in the official transactions of the society.

It might be observed here that great care should be exercised so to conduct a society identified with a specific branch of engineering, that, as far as practicable, all of its divisions receive due consideration. In an institute of electrical engineering, the telegraph and telephone, electric traction and electric lighting, the central station and the isolated plant, transmission and distribution, design and construction, theory

and practice, in fact all branches of electrical engineering, should receive consideration, and in soliciting papers for the series of meetings held during the year a wide range of subjects should be covered so as to interest and attract the largest circle of members.

We have already referred to the importance of conducting a national society on broad lines so that the members at large shall have a share in the benefits as well as the obligations of membership, whether they are located near the headquarters of the society or at a distance therefrom. It is manifest that when the monthly meetings, as well as the more important annual functions, are held at the headquarters of the society, the distant members feel that they are at a disadvantage, from which arises a tendency to form local clubs, or organizations and to secede from the parent society, or at least to lose interest in it. Our Institute has met this situation courageously, and through the initiative of Past-president Scott a series of local organizations was established, the number of which has been increased under succeeding administrations. These organizations have done much to keep up the interest in the Institute at distant points, and have undoubtedly induced desirable accessions to our membership and been an important stimulant to professional activity.

Our sister societies are facing the same problem and are watching the result of our undertaking—it can no longer be called an experiment—with great interest. But this scheme of local organizations, while undoubtedly successful, is developing new problems and new conditions, and requires the constant care and supervision of the central administration.

Value of Natural Gas Production.

The approximate value of the natural gas produced and sold in the United States, as reported to the United States Geological Survey, is shown in the following table:

State.	Value.
Arkansas and Wyoming	$ 6,515
California	114,195
Colorado	14,300
Illinois	4,745
Indiana	4,342,409
Indian Territory and Oklahoma	49,665
Kansas	1,517,643
Kentucky*	322,404
Missouri	6,285
New York	522,575
Ohio	5,315,564
Pennsylvania	18,139,914
South Dakota	12,215
Alabama and Texas	14,082
Utah	
West Virginia	8,114,249
Other States	
Total**	$38,496,760

*Includes small quantity produced in Tennessee.

**Does not include value of gas produced in Canada and consumed in the United States.

Prosperity Predicted.

C. C. Kauffman, president of the New Haven Iron & Steel Co., New Haven, Ct., when asked to give his opinion of the outlook of the iron business, said: "Our business is in a very healthy condition; we have three months' orders on hand at profitable prices, and think we are again entering upon a period of remarkable activity, and that the iron business of this country is about to reach limits never dreamed of. Am surprised at the amount of business that is being offered. The prospects for our company were never brighter. In the last five and one-half years we have paid 68 percent dividends and added about $100,000 to our surplus, and I see no reason to doubt that we have five years of even better business in sight."

BRITISH NEWS NOTES.

D. Davies, proprietor of the Dunston Iron Works, died recently at his home in Gateshead, Durham, at the age of 67 years.

C. Richards Sr., founder of the firm of Charles Richards & Sons, bolt and nut manufacturers, died at Wednesbury, Staffs., recently at the age of 68 years.

John Richmond, of William Park & Co., spade and shovel manufacturers, of Wigan, Lancs., sailed from Southampton recently on the Saxon for a combined business and pleasure trip to the Cape.

The death is announced of J. Chambers, of Tankersley Old Hall, Chapeltown. Mr. Chambers had been employed by the firm of Newton, Chambers & Co., Thorncliffe Iron Works, as foreman of the molders and inspector of cast iron goods for many years. The deceased was 64 years of age.

William Thomas, formerly of The Clevelands, Wolverhampton, died recently. Mr. Thomas was head of Edwin Richards & Sons, axle makers, Portway Works, Wednesbury, Staffs., and was a director of Thomas Parker, Ltd., electrical engineers.

Thomas Bradford, of Salford, Manchester, and London, died recently in his 80th year. Born in 1825, and apprenticed early in life to the ironmongery trade, his career comprises the whole history of the domestic machinery trade.

J. C. Hill & Co., Cwmbran, Mon., have been registered with a capital of £10,000 to carry on the business of iron masters, founders, workers, iron-wire manufacturers, etc. The first directors are: E. H. Crawshay and Lieut. Col. T. M. Whale. The registered office is Oakfields, Cwmbran, Mon.

The Express Steel Works, Cwmavon, belonging to the Copper Miners Tinplate Co., was recently visited by a serious fire. The blaze lasted about four hours and the damage is estimated at from £300 to £400.

Samuel Thompson & Co., Ltd., has been registered with a capital stock of £25,000, to acquire the ironfounding business carried on at Millfields, near Wolverhampton.

William F. Smithers and Albert Jeynes, both for many years with Ashmore, Benson, Pease & Co., Ltd., of Stockton, have formed a private limited company which will be known as Smithers & Jeynes, Ltd., Tees Foundry & Engineering Works. The new firm will do rail cutting, repairs to machinery, and general engineering, and will turn out points and crossings, turning tables and general castings.

A report coming from the Boilermarker Society states that in the Manchester district some firms have orders that will keep them busy until the end of the year, and other firms have to put on night shifts to get through with the work on hand.

Twaites Bros., Ltd., of Bradford, have obtained a contract for the supply of 17 steam hammers varying in size from five cwt. to three tons, for the equipment of the Metropolitan Amalgamated Railway Carriage & Wagon Co.'s new works at Birmingham.

Most of the pig iron turned out at the works of Messrs. Baldwins, at Landore, is being run direct to the steel smelting furnaces near. The erection of the new blast furnace is being pushed along as rapidly as possible and when completed it will have a much larger capacity than those at present in operation. The average output of the furnace will not be far short of 2,000 tons weekly.

Alfred Pearce died recently at his residence, 73 Firs Hill Road, Sheffield, in his 60th year. Mr. Pearce with his brother, Edward Pearce, carried on the business of Augustus Pearce & Sons, iron, steel and scrap merchants, Sheffield.

JOSEPH WHARTON'S VIEWS ON TRADE PROSPECTS.

BELIEVES PRICES ARE BOUND TO ADVANCE SOMEWHAT.

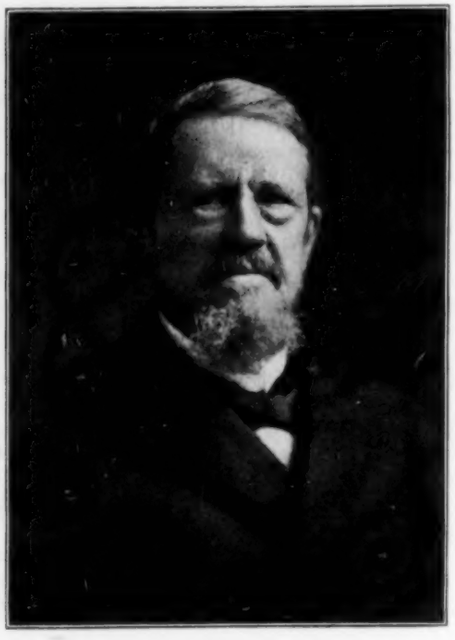
Has Purchased Additional Land and Expects to Build a Steel Plant—Conditions Broadly Discussed.

(Special Correspondence)

Philadelphia, Aug. 22.—In response to a request from a representative of *The Iron Trade Review* for a statement of his views in the present condition of the iron and steel trade and the outlook for the pig iron market, Joseph Wharton, whose furnaces have a greater product than those of any other individual in the United States, says:

"The entire product of all the pig iron furnaces in this country barely satisfies its normal demand, which demand grows much faster than does our rapidly increasing population, because new uses for iron are constantly appearing and because our people are becoming more and more determined to possess abundantly everything for which iron and steel are needed.

"It is true that occasionally a temporary lull in the demand causes prices to fall so low that sundry furnaces



JOSEPH WHARTON.

of the old types are obliged to blow out, while on the other hand an unusually brisk demand sometimes causes prices to rise to a point which necessitates considerable importation; yet, speaking broadly, it is quite certain that this country urgently needs all the iron it now produces, or that it can possibly produce in the near future.

"Within the last three months a temporary lull in demand caused prices to fall below the cost at which old style, or badly located, furnaces could produce pig iron, as is shown by the fact that the product for last June fell 171,000 tons below the product for last May. The somewhat better prices since ruling have checked this decline, yet nothing but still better prices will prevent still greater inadequacy of output.

"This recent lull, or stagnation, in the market demand for pig iron arose largely from the fact that most of those consumers who are not themselves producers of pig iron, or who produce less than they need, contracted months ago for all the iron they expected to want until October 1, or even later. The few independent producers whose iron was not so sold conceded one point after another to cautious buyers, until the losing point was reached as above mentioned.

"The natural reaction to better figures has recently set in with considerable force now that buyers find their wants insufficiently provided for, and on this rising tide buyers come with ever increasing volume, hoping to cover their wants before the price has greatly advanced, thus causing a brisk market at moderately remunerative prices. These prices are I think bound to alvance somewhat further as the insufficiency of product becomes more obvious, yet it is bound that no sudden, or very great advance will take place for the remainder of this year.

"It must be remembered that this upward and downward swing of prices of pig iron does not greatly affect that large proportion of the pig iron producers whose establishments consume in the manufacture of steel or for other purposes all the pig iron they make; the moderate number of independent producers of pig iron are the ones most sensibly affected by these fluctuations, and it is much to be desired that the range of those fluctuations could be so moderated as to keep all such independent furnaces steadily at work.

"The results of the fluctuations are first, to weed out all the weak furnaces already alluded to, and second, to cause the owners of the stronger furnaces to erect steel mills thus consuming their own production of pig iron; my own establishment of furnaces having the capacity of 1,000 tons pig iron daily, and my own iron mines near them are capable of supplying ore to them, and together with my own coal lands and coke furnaces may be looked upon as a typical example of a pig iron plant, certain to be supplemented in the near future by a steel plant which will consume its product. I have in fact purchased additional land and have consulted with engineers with the view of soon starting the erection of such a steel plant.

"The steel mills of the country which are not provided with blast furnaces are not benefited by the upward and downward swing of pig iron prices. It is possible that some of them may undertake to remedy this condition of uncertainty by building blast furnaces to match to some extent their increasing demand for pig iron, yet it seems impossible for such a movement to attain any important results for some years to come, because not only is the demand for pig iron constantly growing, but the construction of modern blast furnaces is so tedious and costly a process that only after several years of very heavy expenditures can modern furnaces be set to work, and then comes the question where are they to procure the needful ores to supply them.

"This question of ore supply underlies of course the entire situation, and although the Lake Superior Mines are capable of yielding for some years to come, considerably larger output than hitherto, it has been calculated that the entire resources of that enormously productive region will be exhausted within a moderate period variously estimated at forty to sixty years.

"There are, to be sure, other considerable deposits of iron ore now being worked in other parts of the United States, such as Port Henry magnetic region, that of northern New Jersey, where my mines and furnaces are situated;

the hematite region of Alabama, and various small or undeveloped deposits in other parts of the Eastern and Southern states; but all these will shortly be exhausted, probably within the period just mentioned for the Lake Superior region.

"Looking, then, for supplies of iron ore from other quarters, we perceive that numerous foreign localities can supply considerable quantities of ore for furnaces along the Atlantic seaboard; namely, Nova Scotia, Cuba and some other West India Islands, some Mediterreanean countries, and some in South America. Central America also offers some iron ore and considerable quantities of manganese ores. All of these are, however, doomed to exhaustion and cannot, I think, be depended upon for even one century, perhaps for not much more than one-half that time.

"In the western interior of our vast country, and running northward into British Columbia and southward into and beyond Mexico, there are several regions which promise large supplies of iron ore, but all of them impracticable for present use on account of their distance from fuel, limestone and markets. The best of these will shortly be called into use, thus postponing to some extent the iron famine which many thoughtful persons foresee, and no one can now tell to what extent other discoveries will be made of iron ore in sufficient quantities and so situated as to postpone still further, perhaps much further, the deficiency of ores which we anticipate. It is to be hoped that the known magnitude of the various deposits now being worked may be considerably, or even largely, increased by the practice of deeper work, so that the mass of available ore may in this manner turn out to be double or more what is now estimated to be the total available quantity.

"Furthermore, the apprehended great advance in the price of pig iron and of all its products may be considerably diminished by new and improved processes cheapening production. And still again many persons hope that aluminum will come to be produced so largely and used so extensively in many ways to replace iron that the impending shortage of iron may be largely palliated by the substitution of aluminum.

"In conclusion it is not to be expected that pig iron, the foundation of all iron and steel industries, will be cheaper in the future than in the recent past, but that on the contrary a gradually advancing scale of prices must be encountered, as the most available, richest and easiest worked ores are from one place to another exhausted. After all, however, the human race will in some way maintain itself on this planet, and we of this generation at least, with our children and grandchildren, will encounter many more urgent difficulties than an iron and steel famine."

Smelting by Electricity in Canada.

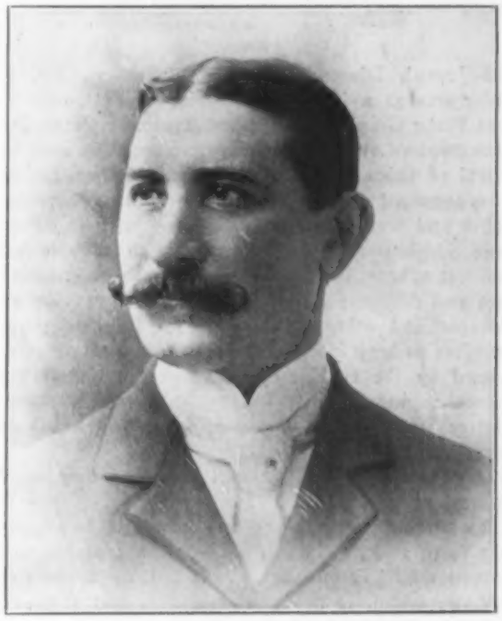
Vice Consul General Gorman, of Montreal, reports that the Dominion government has appropriated $15,000 for making experiments with the electric process of smelting ores and manufacturing steel at Sault Ste. Marie, and the Consolidated Lake Superior Power Co. will furnish a building and dynamo capable of supplying 400 electric horse power for four months free of charge. All kinds of ores will be experimented with, and important results are expected to be obtained.

Great possibilities for Canada underlie the inauguration of a cheaper process for manufacturing pig iron and steel than is now in use. Ontario is dotted with ore bodies, the development of which is at present prevented by lack of cheap fuel. There is coal in the eastern and western parts of Canada, but the cost of conveying it to points where coke is needed for smelting purposes is prohibitive. On the other hand, there are a great many water powers throughout the provinces of Ontario and Quebec where electricity can be developed and utilized. If the electric system proves to be commercially feasible Canada is looking for the inflow of a large amount of capital and considerable mining development.

CONVENTION OF THE NATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.

The convention of the National Railroad Master Blacksmith's Association was held in Cleveland on Aug. 15-17, 1905. The headquarters were at the Forest City House, and business and professional sessions were held at Memorial Hall. Two sessions were held each day, except the last, when the afternoon session was omitted, an excursion taken instead. The society has a membership of somewhat over 300 and is composed of foremen blacksmiths in railroad and car shops throughout the United States, Canada, Mexico and South America. The present convention was the most successful in the history of the association, both in point of attendance and in number and quality of the papers presented. There were about 175 members registered.

The papers presented at the meeting were prepared by a committee and each paper was read at the convention by the chairman of this committee. Papers on the following subjects were presented: "Forging Machine Formers, Bulldozers, Etc." D. H. Edwards, chairman; "Spring Making, Repairing and Tempering," Jas. Fenwick, chairman; "Oil Furnaces," John McNally, chairman; "Manipulating Tool Steel, Including High Speed Varieties," R. A. Mould, chairman; "Tools and



THOS. F. KEANE.

Formers for Steam Hammers," D. Fitzgerald, chairman; "Best Material and Method in Forging Motion Work," J. B. Andrews, chairman; "The Ideal Blacksmith Shop." H. G. Price, chairman; "Best Methods of Repairing Locomotive Frames, Both Iron and Steel," W. Smith, chairman; "Best Method of Testing Materials and Selecting Same for Uses Intended," W. J. Brunner, chairman.

At the last meeting on Thursday morning the business of the society was transacted, and Mr. W. W. McClellan, of Denver, offered to pay the secretary's salary of $200 for the year 1904-05. The offer was accepted and a vote of thanks was tendered Mr. McClellan. Action was taken on various amendments to the constitution and by-laws, and the officers for the coming year were elected.

The new officers are: President, D. B. Swinton, Montreal, Can., Canadian Pacific railroad; first vice president, J. S. Sullivan, Columbus, O., Pennsylvania lines; second vice president, G. H. Judy, Pittsburg, Pa., Baltimore & Ohio railroad; secretary-treasurer, A. L. Woodworth, Lima, O., Cincinnati,

Hamilton & Dayton railroad; chemist, J. W. Williams, Boston. It was decided to hold the next meeting at Chicago. In the afternoon the members made an excurson to the Collinwood shops of the Lake Shore & Michigan Southern railroad.

The subjects for next year's convention are: "Thermit Welding and Its Cost," Geo. Kelly, chairman; "Making of Locomotive Frames from Scrap to Finish; also Repairing; How Many Broken Through the Year; How Often Broken in the Same Spot," James Fenwick, chairman; "Best Coal to Use in Smithshop," John Buckley, chairman; "Best Manner of Annealing High Speed Tool Steel; also of Tempering the Same," Geo. Lindsay; "Case Hardening Methods, Time Taken, Specimens of Work Furnished and Kind of Material Used," J. S. Henicks; "Piece Work vs. Day Work," R. A. Mould; "Tools and Formers for Bulldozers, Steam Hammers and Forging Machines," Thos. F. Keane; "Classification of Work in the Shop," W. J. Mayer; "Flue Welding, Best Methods and Fuel," G. H. Judy; "Frogs and Crossings," F. Uren.

The president of the society during 1904-05 was Mr. Thos. F. Keane, of the Rambo Iron Works, Hilburn, N. Y. Mr. Keane began his career in a railroad shop at Fitchburg, Mass. He was for three years foreman in the Boston main shops, which position he resigned to become foreman of the shops at Hilburn.

WIRE ROPE LUBRICATION.

The Joseph Dixon Crucible Co., Jersey City, N. J., manufactures as a lubricant for wire rope Dixon's Ticonderoga Flake Graphite. This, the company states, has the endorsement of the leading manufacturers as well as the approval of those experienced in its use, because of the well recognized fact that flake graphite prevents the abrasion and wear of all parts coated with it. For this purpose graphite must be combined with suitable greases to make it adhere, but there has always been considerable danger and difficulty in applying grease to moving cables.

Elevator and other cables used for hoisting purposes, are subject to both internal and external wear; the former is caused by the rubbing of the wires and strands upon one another under pressure in bending over the sheaves, the latter by rubbing and wedging in the grooves of the pulleys.

Unless the cables are kept well lubricated they wear and deteriorate rapidly.

Flake graphite as a wire rope lubricant is supplied in such a form as to make it thoroughly acceptable to practical men who have used it. It is put up in the form of a package which is of about the size and shape of an ordinary book and contains nearly three pounds of graphite lubricant. It is easily applied by holding the open edge of the package against the cable while in motion. The combination is known as Dixon's Handy Graphite Rope Dressing.

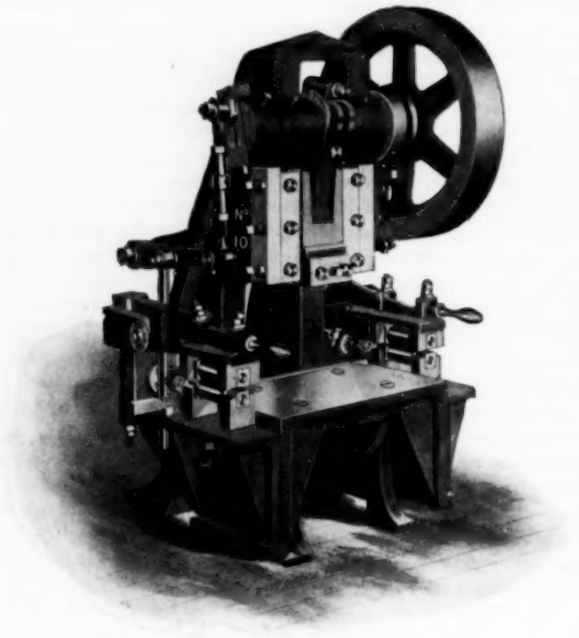
A Zinc Alloy.

A zinc alloy which is easily worked, and stands rough usage better than white metals made with lead as a base, may be made by using 88 lb. of zinc, 10 lb. of copper, and 2 lb. of aluminum. By using 12 pounds of copper and no aluminum the alloy will be made harder. The process of melting is as follows: The copper is first melted and enough cold zinc is added to kill it and to prevent it spitting when added to the bulk of the zinc. The zinc is melted separately, and the copper poured into it, and the mixture is stirred. The aluminum is added after the copper and zinc have become perfectly fluid, and the mixture is thoroughly stirred. It is then cast into one inch plates, which are cooled, broken up and remelted under small charcoal. The alloy should be poured into horizontal sand-covered molds. The surface of this alloy resembles oxidized silver, and may be filed and polished. It cuts to a file similar to gray iron.

PRESS FOR MAKING BAND SAW TEETH.

E. W. Bliss & Co., Brooklyn, N. Y., manufacture a very compact little machine with a special automatic double roll feed, designed for cutting the teeth on band saws. This is shown in the accompanying illustration. The feed is adjustable and will cut either a coarse or fine tooth, from sixteen points to the inch to four to the inch, common teeth.

An important feature of the press is the construction of the feed rolls which are open at the end, allowing the ready insertion and removal of the stock. The two small hand levers shown are used for raising the rolls prior to starting a new strip of stock or for removing an old one. The feed will permit of a wide range of adjustment, which is effected by sliding the connection on the crank shaft up and down a "T" slot which holds it securely in place. This sliding adjustment is controlled by a set-screw which easily moves it to the desired



"BLISS" PRESS WITH SPECIAL DOUBLE ROLL FEED.

location. The press has a one-inch stroke with an adjustment of one inch. The distance from bed to slide when the stroke is down and the adjustment is up is 7½ inches. The fly wheel weighs 115 lbs., and is run at 300 revolutions per minute.

Producing High Vacua.

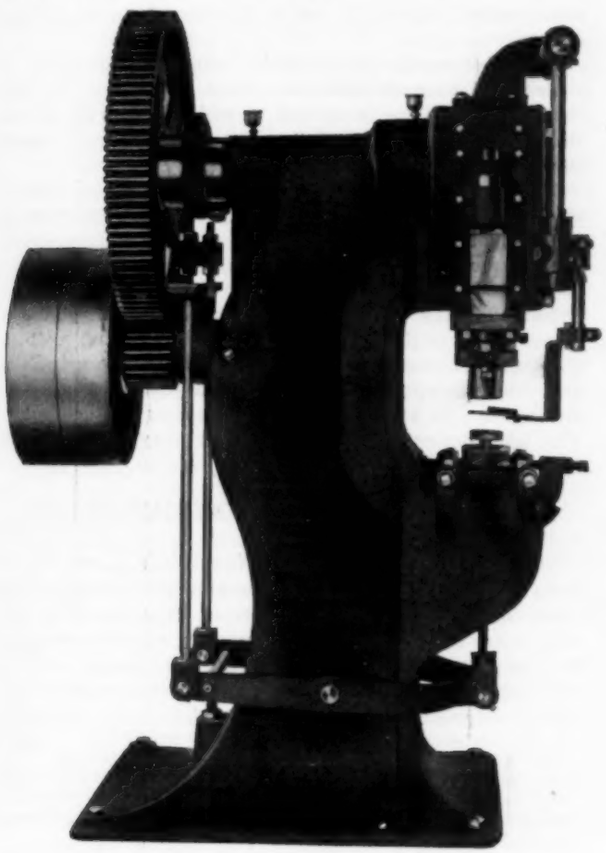
The German scientific journal *Prometheus* states that the English physicist Dewar has found a new process for obtaining high vacua, which forms another practical employment of liquid air. It is known already that charcoal possesses the property in a high degree of absorbing gases. Dewar has demonstrated that this absorptive property of charcoal increases manifold, if it is cooled to the temperature of liquid air (about 185). The absorption takes place so energetically that if the charcoal is contained in a closed vessel the latter soon becomes void of air.

Where formerly the quicksilver pump had to be worked incessantly for hours and days, it now suffices to attach a tube to the vessel intended to be freed of air, into which some charcoal, preferably of cocoanut shell, is placed, which has been immersed in liquid air. In this manner a vacuum is obtained within a few minutes suitable for producing cathode or X rays. This method possesses also the advantage that the moisture, which can sometimes be only removed with difficulty from the vessel, is at once condensed in the tube.—[U. S. Consular Report.

PUNCHING MACHINE FOR MAKING WASHERS.

A punching machine for manufacturing washers, armature disks and other specialties for the electrical and hardware trades has been brought out by the Krips-Mason Machine Co., of Philadelphia. The machine is intended primarily to be fitted with punches and dies of special design which are made under the patents of Joseph M. Mason. The punch, however, may be given a larger range of work, as these special punches may be removed and others substituted. The machine may also be fitted up as a shearing machine.

The machine may be fitted with either single or multiple dies as desired. It cuts and punches at one stroke. It was first built for the manufacture of washers from various materials, but the punches and dies on the lines of those designed by Mr. Mason for producing washers, have proved very successful for making large and more complicated pieces and the machine may be operated rapidly on this type of work.



SIDE VIEW OF PUNCHING MACHINE.

The head of the machine is given a reciprocating motion in a vertical direction by the means of the usual elliptical gear. The upper die is bolted to the lower end of the head. The lower dies are carried on a bolster, which is bolted to the the frame of the machine. For punching washers there is arranged centrally in each of the openings of the upper die a punch which forms the holes of the washers. Pins are placed in the ejecting sleeves of the upper die to prevent the washers adhering to them. A stripper plate in the lower die frees the stock from the dies so that it may be fed along for the next stroke of the machine.

The stripper plate for the lower dies is operated by levers at the bottom of the machine. These receive their motion from the main shaft by means of a cam. The washer when forced from the upper die is carried to a receptacle at the side of the machine by means of a carrier shown in Fig. 1. This carrier, in the illustration, is between the upper and lower die and has a horizontal motion. As there is no reason for touching the stock or finished product at any point near the dies, there is no danger of the operator injuring himself in any way. The machine is almost automatic in operation, requiring no more attention than that which can be easily given by a boy. All the adjustments are easily made.

The machine will make washers or other articles from brass or similar soft material, or from fiber, leather or paper just as well as from iron or steel plate. It may also be used to punch cold nuts and armature disks up to six inches in diameter have been made on the machine. The largest size machine made at present is for work six inches in diameter, although larger sizes are contemplated. The machine at present is built in four sizes.

FRONT VIEW OF PUNCHING MACHINE.

The Krips-Mason Machine Co. states that it is more economical to punch washers at a single stroke, when they are made from scrap metal, in preference to using multiple dies. Any concern producing a large amount of scrap sheet metal can work it up into washers in this manner and effect quite a saving. The Krips-Mason company find the production of washers from scrap metal a large part of their business and have made contracts for the working of many tons of material into washers in this way.

The washers or other metal pieces produced by this machine have no burr on the lower edges. They come from the machine perfectly flat and no rolling is needed to finish them. The largest size machine will punch plates up to 1½ in. thick and the smallest size plates up to ¼ in. thick.

LUNKENHEIMER IMPROVED REGRINDING VALVES.

The Lunkenheimer company, manufacturer of the well-known high grade Lunkenheimer engineering specialties, has made a number of desirable improvements on its regrinding valves.

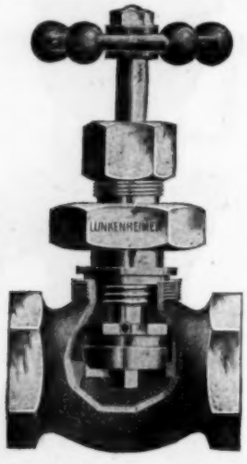
The changes, however, are not at all radical, as the valve has been in use for half a century, and has proven itself to be of the correct design, having given general satisfaction wherever used.

The manufacturer has, however, increased the weight of the valve, not because the thickness of shell, etc., were too light in the former products, but merely as an additional precaution against rough handling while attaching.

The medium pattern valves are guaranteed to stand a working pressure of 200 pounds per square inch, and the extra heavy pattern pressures up to 300 pounds per square inch.

The shape of the valve has also been altered. This not only makes an elegant appearance, but also increases the area through the valve, permitting an unobstructed passage through, the area being more than equal to that of the connecting pipe.

To insure a perfect and strong joint between the pipe and valve, the pipe threads have been made considerably



LUNKENHEIMER REGRINDING VALVE.

longer, thereby overcoming the danger of stripping threads, which so often happens, owing to rough and unskilled workmanship in attaching.

All sizes of the valves now have lock-nuts on the hand wheels, which facilitates the taking apart and assembling of the valve for repairs, etc.

Referring to the sectional illustration, it will be noticed that the hub which carries the operating stem is secured to the body by a union connection, which, in turn, screws over the shell of the valve body. By means of this construction, it is impossible for the hub and the body to become corroded together, as the thread which holds the union ring to the body is protected at all times from the action of the steam, the joint being made between the flange on the hub and the neck of the body. This connection also acts as a tie or binder in screwing over the body, and tends to make the valve rigid and strong.

The disc is held loosely to the stem by means of a lock-nut and will therefore adjust itself to the seat very readily and a tight joint can be relied upon.

The stem is fitted with a very strong, durable and long thread, and the manufacturer emphatically states that the valve is very easy to operate, and that there is practically no exertion necessary to tightly close even their largest valves. The reason for this is that the hand wheels are so proportioned in respect to the seat opening, that no additional leverage need be applied to the hand wheel to facilitate the operation of the valve.

To regrind the valve, the bonnet ring is unscrewed and the trimmings are removed from the body. A wire or nail is placed through the lock-nut and stem, a little powdered sand, or glass and soap, or oil is placed on the disc, and the trimmings are again placed in the valve and reground.

The bonnet has a small rim or projection on the bottom thereof, which acts as a guide on the inside of the valve neck while regrinding.

The seats in the valve-bodies are very small when the valves are sent out from the factory, which permits of considerable regrinding, and is considered an important feature.

The valve can be packed under pressure when open or closed, and to pack while the steam is flowing through the valve, the same is opened as wide as possible, when the shoulder at the top of the stem forms a seat beneath the stuffing box.

The material used is of the highest grade of bronze composition, and the workmanship is in every respect commendable. Before being sent out of the factory, every valve is thoroughly tested and inspected, the stuffing boxes are packed, and they are ready for immediate use.

The company has, in connection with their plant, a complete physical and chemical laboratory, which enables them to manufacture their products of such composition as is best adapted to withstand the chemical actions, strains, etc., to which the various products are subjected. The laboratories also enable the company to guarantee their products in every respect.

METHOD OF FILING MACHINE CATALOGUES.

The New Britain Machine Co., New Britain, Conn., has in use a system of storing and indexing catalogues received from other manufacturers which because of its convenience and untility has been borrowed and adopted by a number of other firms in New England. The pamphlets are stored in cabinets containing drawers of four different sizes to accommodate the widely varying dimensions found in trade publications and the data about the exact location of each catalogue, its character, age, etc., are recorded in a card index having three different modes and means for reference. The system is the result of intelligent adaptation to the needs of the manufacturing plant and is due to the ingenuity of Mr. H. E. Erwin, sales manager of the firm.

The filing drawers are of dimensions chosen to accommodate every conceivable size and shape of catalogue. There are four sizes designated X, Y, Z, and "star" respectively. The X drawers take catalogues 5½ by 6 in. and smaller; the Y series those up to and including 6½ by 10 in.; the Z sizes pamphlets 10 by 12 in., and the "stars" everything of larger dimensions which can not be stored regularly anywhere.

In the drawers of the different series the catalogues are roughly grouped according to the nature of the machines described and the firm name, kind of articles produced and other information which it is often desirable to find quickly without actual reference to the publication itself, recorded in the card index which is conveniently placed for constant and easy access.

The cards are of the regular library, 3 by 5, size, and the index is divided into three distinct files; the "name" file; the "subject" file, and the "subdivision" file. Reference to one or another of these files furnishes much information besides locating the catalogue in the cabinet. In order to eliminate superfluous or superannuated material and to restore gaps caused in various ways the index is revised periodically, usually about once a month.

In the New Britain Machine Co.'s plant the office stock, stationery, letter heads, publications, etc., is stored in much the same way, reference to a card index giving instantly the location and condition of the article sought.

NEWS FROM MANY INDUSTRIES.

New Buyers :—

The Lackawanna Bridge Co., Scranton, Pa., has been incorporated with $20,000 capital stock.

The Union Metal Castings Co., Chicago, has been incorporated with $2,500 capital stock. The incorporators are: John West, William DeCardy and Fred DeCardy.

The Toledo Plow Co., Toledo, O., has been incorporated by E. W. Toberton, H. E. Frankeberger, R. W. Kirkley, Charles W. Bond and Frank H. Gear. The capital stock is $25,000.

The Haberkorn Engine Co., Fort Wayne, Ind., has increased its capital stock from $50,000 to $100,000. Fremont L. Jones and Fred D. Ham are among the directors.

C. B. Holding is one of the incorporators of a company at Toledo, O., formed to manufacture a gas heating stove, of which Mr. Holding is the inventor. The company is incorporated for $50,000.

The Strond-Humphrey Mfg. Co., Hastings, Minn., has been incorporated to build the Strond-Humphrey gasoline engine. The engine is to be used for farm, marine, pumping and other purposes.

The Havana Mfg. Co., Havana, Ill., has been incorporated to manufacture machinery. The capital stock is $42,000, and the incorporators are: John H. Cogswell, George W. Starr and C. P. King.

The Continental Engine Co., Chicago, Ill., has been incorporated with $10,000 capital stock, to manufacture machinery. The incorporators are: John E. Pfeffer, Harris F. William and Frank Pfeffer.

The Bloomington Iron & Brass Co., Bloomington, Ind., has been incorporated with $10,000 capital stock. W. E. Allin is the president.

The South Bend Machine Mfg. Co., South Bend., Ind., has been incorporated with $50,000 capital stock. The directors are: Daniel McHenry, George Brown, Henry H. Hutson, Elmer J. Martin, William F. Koeller, Stuart MacKibbin and Shirley Reynolds.

The Interstate Iron Co., New York city, has been incorporated with $100,000 capital stock. The directors are: John G. Peters, of New York; Edwin Belknap, of Chicago; Zalmon G. Sholes, of Buffalo; Frank G. Conklin and Dudley M. Shiveley, of South Bend, Ind.

The Harrisburg Coal & Coke Co. has been incorporated at Wilmington, Del., with an authorized capital of $250,000, for the purpose of buying and selling coal lands and the storage of coal.

Bids are wanted Aug. 28 for building three steel bridges near Woodward, Oklahoma Territory. They will be 180 ft., 60 ft. and 330 ft. long, respectively. Communications should be addressed to C. C. Hoag, county clerk.

The Carbon Iron Works, of Weatherly, Pa., has been granted a charter for operation of a works at Weatherly, Pa. The incorporators are Geo. N. Seidel, Edward C. O. Wagner, Wm. F. Wagner, Oscar H. Dilley and Robt. W. Bruce.

The American Gasoline Engine Co., St. Paul, Minn., has been incorporated with $20,000, capital stock. The incorproators are: John W. Shepard, Delos H. Graves and Glenn A. Morton, all of St. Paul.

The Snow Heating & Roofing Co., Chattanooga, Tenn., has been incorporated with a capital of $20,000, to manufacture and sell heating appliances and supplies. Incorporators are: T. A. Snow, William L. Frierson, S. P. Loomis, John H. Bankston and T. T. Rankin.

The Hazelhurst Machine Shops, Hazelhurst, Miss., has purchased and placed almost all of its required equipment, but is still in the market for some small tools, such as boring bars, etc.

The Goodman Coal & Coke Co., Memphis, Tenn., has been incorporated with a capital stock of $100,000. The incorporators are: J. J. McNulty, L. E. Offut, W. H. Harrelson, S. V. Gardner and B. F. Cornelius.

The Monessen Mfg. Co., Monessen, Pa., has been incorporated for the manufacture of castings, forgings, tools, machines and machinery. The capital stock is $5,000. S. B. Graham, of Belle Vernon, is one of the incorporators.

The Wisconsin Steel Co., North Freedom, Wis., has been incorporated with a capital of $1,000,000. The incorporators are: Benjamin K. Miller, Walter D. Hickman and John A. McCormick, Milwaukee and Chicago capitalists.

Confectioners' Machinery & Mfg. Co., is the title of a recent incorporation in Massachusetts, having a capital of $400,000. The incorporators are: President, Frank H. Page, No. 116 Ingersoll Grove; treasurer, Henry H. Bowman; Clerk, George C. Baldwin, all of Springfield, Mass.

W. C. Ellis & Sons' Iron Works, has been incorporated to manufacture and repair iron works. It will be located at Memphis, Tenn., and the incorporators are: W. C. Ellis, W. J. Ellis, S. J. Ellis, H. C. Ellis and H. M. Ellis. The company will be captialized at $30,000.

The Joliet Bridge & Iron Co., Joliet, Ill., has been incorporated with a capital stock of $10,000. The incorporators are: R. C. Morrison, S. P. Avery and J. Heatherwick. The new company will manufacture and construct bridges and metallic structures.

The Bedford-New York Foundry Co., Bedford, Ind., has been incorporated with $100,000 capital stock. The incorporators are: Frederick D. Norton, Clinton S. Norton, Robert Reed, S. P. Reed and Spencer K. Norton.

The Dominion Automobile Co., Ltd., Toronto, Canada, has been incorporated with a capital stock of $100,000, for the purpose of manufacturing and dealing in automobiles, motor boats, etc. The directors are: A. H. Beaton, C. L. Wilson, J. McArthur, J. Barber and C. E. Holland, all of Toronto.

The Ashland & Ironton Bridge Co., Ashland, Ky., has been incorporated with a capital stock of $1,500,000, to build a bridge over the Ohio river, connecting Ashland with Ironton, O. O. E. Fischer has been appointed chief engineer with an office in Cincinnati. The Cincinnati, Hamilton & Dayton is interested in this bridge project.

The Lebanon Stove Co., Lebanon, Pa., has been incorporated to operate the Lebanon Stove Works plant. The incorporators are: Richard Meily, O. P. Smith, Adam B. Miller, J. H. Miller, John M. Allwein, John Hunsicker, H. A. Reinoehl, D. H. Dillman, Philip Folmer, Moses Spangler, Thomas V. Miller, W. P. Gamber and Adam T. Lerch.

The Central Foundry Co., Milwaukee, Wis., has been incorporated with a capital stock of $10,000. The incorporators are: Daniel Walsh, S. Edward Smith and Alex E. Martin.

C. B. Ford, Inc., is the name of a firm just organized at Richmond, Va., by C. B. Ford, A. St. Clair Butler and L. H. Wyland, to conduct a general business as contracting engineers and machinists.

A. F. Baumgerten & Brother, Pittsburg, are in the market for a second-hand corrugating press and one stand of sheet mill housings with 6-foot spread.

The Gas Motor Co., Waycross, Ga., has been incorporated for the purpose of manufacturing stationary and marine gasoline engines, motor cars and automobiles.

The capital stock is $18,000, and the company's charter grants the privileges of increasing the capital to $200,000. Work has been commenced on the construction of the factory building, which is to be 40 x 100 ft.

The Universal Nut Machine Co., Ltd., Montreal, Canada, has been incorporated with a capital stock of $200,000, for the purpose of manufacturing and dealing in machines for the manufacture of nuts, washers and other hardware. The directors are: A. Hendry and W. Eckstein, of Montreal; C. A. Duclos, Westmount; H. L. Dinning, Lachine, and C. Ralph Longueil, all of the Province of Quebec.

The Utah Copper Co., Salt Lake City, Utah, is in the market for a large amount of machinery, including concentrating tables, vanners, crushing machinery, rolls, Chilian mills, electric motors and equipment for generating plant, elevators, conveyors, screens and about 4,000 tons of structural steel for the new buildings which it contemplates erecting for its smelting plant.

E. Cooper Wills, of Bluefield, W. Va., engineer in charge of considerable new construction, is receiving bids for the power plant equipment for the East River Electric Co. He is installing in that plant 1,500 h. p. boiler capacity, one 750-h. p. direct connected cross compound engine, one 450-h. p. Corliss engine, one 250-h. p. slide valve engine, one 40-h. p. engine and all the requirements which go to constitute an electric light plant for generating current for steet railway and lighting purposes.

The Roberts Hardware Co., Clarksburg, W. Va., has been incorporated with a capital stock of $10,000 by A. L. Roberts, A. M. T. Cunningham, E. B. Templeman, and others. The place of business will be located on Pike street, that city.

Cooper-Broad Hardware Co., Brownwood, Tex., has been incorporated with a capital stock of $25,000. Incorporators are: P. J. A. Cooper, I. L. Cooper and Howard Broad.

Juhl Automatic Hoisting Machine Co., Chicago, capital, $10,000, has been incorporated to manufacture machinery; incorporators: Thomas J. Morgan, Julius Rubinstein, Joseph Staab.

Burgum Strike-off Machine Co., Pittsburg, has been incorporated with a capital of $5,000.

The Insterstate Iron Co. has been incorporated under the laws of the State of New York with a capital stock of $100,000. The incorporators of the company are John G. Pearse, New York city; Edwin C. Belknap, Chicago; Zalmon G. Sholes, Buffalo, and Dudley M. Snively and Frank G. Conklin, South Bend, Ind.

Iron Workers Supply Co., of Brooklyn, has been incorporated to deal in structural supplies for architectural iron workers. The directors for the first year are as follows: William Kasper, Frederick Koetzle and Abraham A. Phillips, of Brooklyn.

Fires:—

Fire in the hardening department of the National Saw Works in Middletown, N. Y., last week, caused a loss of $112,500.

The Hercules Gas Engine Works at 115-131 Bay street, San Francisco, Cal., were destroyed by fire Aug. 15. The loss is between $150,000 and $200,000, nearly covered by insurance.

The loss resulting from the fire in the McDonald Iron Works, at Dawson, Alaska, July 31, will reach $12,000. There was no insurance. The fire is believed to have been caused by defective electric light wires.

Fire destroyed the Pere Marquette round house at New Buffalo, Mich., Aug. 12, and three engines were ruined. It is not known whether the round house will be rebuilt or not.

Owing to a scarcity of water, fire which started in the Simmons Pipe Bending Works, Newark, N. J., resulted in three buildings being destroyed with a loss of $20,000.

New Construction:—

The Eyre Construction Co., of Philadelphia, was awarded the contract for the new county bridge over Zacharias creek, Montgomery country, Pa., at a cost of $3,350.

A machinery shop 80 x 40 ft. is being built in South Bend., Ind., by George M. Shock and will probably require equipment from the trade at once.

The American Can Co. is conducting considerable building operations, its new factory in New York to be double the size of the old building and to cost $200,000.

The Elba Iron Works has secured a permit to build in Philadelphia, iron and iron frame buildings 45 x 375 ft. and 30 x 90 ft., to cost $15,000.

The firm of Haberle & Graham, machinists in South Bend, Ind., has just completed the construction of a one-story addition to its plant.

The Lebanon Chain Works, Lebanon, Pa., is building an addition to its factory, 120 x 200 ft. in size. It is stated that its machinery equipment has been practically all purchased.

The Meyersdale Sheet Steel Co., Meyersdale, Pa., will increase the capacity of its plant and make additions to provide for the manufacture of corrugated roofing by its continuous process.

Through Geo. W. Delaney, secretary of the Reading Iron Co., Reading, Pa., a permit has been obtained for the erection of a galvanized iron building 200 x 224 ft., to be used as a puddling mill.

The new building of the Union Twist Drill Co., Athol, Mass., will be of brick, 180 x 60 ft., and will be erected by Foss, Briggs & Chamberlain, of Worcester, Mass. The work will begin at once.

The Kokomo Steel & Wire Mill. Kokomo, Ind., was wrecked by an electrical and wind storm recently, and four hundred men were thrown out of work. The loss will amount to about $100,000.

The Reading Stove Works, Reading, Pa., is making a number of improvements to its plant. An addition 49 x 230 ft. is being built to the foundry, accommodating some 35 more molders.

Nordyke & Marmon, Indianapolis, have submitted for the approval of the building inspector plans for a large foundry in West Indianapolis. The building will be 104 x 340 ft.

A steel viaduct will be built over the Lackawanna tracks at Bloomfield avenue, Montclair, N. J. The cost is estimated at $60,000. James Owen, county engineer, Montclair.

The Bartlett Steel Co., Joplin, Mo., whose plant was recently destroyed by fire, will rebuild at once, and will require cold saws, punch, splitting shears, drill presses, cranes, hoists, bending rolls and other equipment.

The Grand Rapids Foundry Co., Grand Rapids, Mich., is adding to its present foundry a one-story building 100 x 100 ft., which will be equipped with a traveling crane and other up to date appliances. Gray iron castings are the principal product.

The Central Pennsylvania Traction Co., of Harrisburg, has authorized the erection of a power plant to increase its efficiency at a cost of $250,000. A committee has been named by the board of directors to take charge of the matter.

The Youngstown Furnace & Supply Co., Youngstown, O., will build an addition to its present plant to be devoted to the manufacture of stoves and ranges. The

president of the concern is Leon Gschind, and the secretary and treasurer, Myron Wick.

The Alabama Steel & Wire Co., Gadsden, Ala., is adding largely to its plant in the matter of improved machinery and new construction. It is stated that some of the new addition is to be devoted to wire fence manufacture.

The Detroit Steel Casting Co., Detroit, Mich., is rebuilding its plant, which was destroyed by fire some time ago and is putting in steel and concrete construction throughout, so that its new buildings will be entirely fire proof.

The Schaahe Machine Works, of New Westminster, B. C., has just completed an extension to its foundry, which has become necessary on account of the large number of orders received for rock crusher jaws made from Emett's hardite.

The Fisher Machine Works, Leavenworth, Kan., is erecting a machine shop 100 x 100 ft., and a foundry 80 x 80 ft., both structures to be built of steel and brick. The shops will be equipped with two electric traveling cranes already ordered from Pawling & Harnischfeger, Milwaukee, and other machinery still to be contracted for.

A new company called the Pressed Steel Pole Co., whose product is constructed of cold rolled steel plates pressed into shape desired, used for supporting various wiring systems, is contemplating building a plant in Baltimore. The attorneys for the company are Steuart & Steuart.

The Berkshire Automobile Co., Pittsfield, Mass., is to increase its capital stock from $15,000 to $50,000. A greater part of the new shares have already been subscribed. The company is to enlarge its plant and manufacture automobiles on an extensive scale.

The Clover Leaf Co. has just let a contract for additional machinery for its Frankfort shops, Franklin, Ind., to cost some $15,000. An addition is also contemplated in the near future, as well as the purchase of a number of new engines.

The Termaat & Monahan Co., Oshkosh, Wis., is in the market for machine tools and complete foundry outfit to meet the requirements of the enlargements it is making to its plant in the way of a new foundry building and large additions to its machine shop.

The Curtin, Ruggles Co., 39 Cortland street, New York city, recently organized to design and build plants and machinery for the preparation of cement from blast furnace slag, is putting up works at Sydney, Nova Scotia, for the Sydney Cement Co., which will employ slag from the Dominion Iron & Steel Co., furnaces. It also has a cement plant in process of construction at Ashland, Va., for the Ashland Iron & Mining Co., and is about to begin the construction of slag cement works for the Niagara Cement Co., at Buffalo, N. Y.

The Morse Chain Co., located at Trumansburg, N. Y., is now building at Ithaca, N. Y., a plant of about five times the present capacity. The company was incorporated in 1898, no change having been made either in the name or personnel since starting, Mr. F. L. Morse being the treasurer and general manager.

Bids will soon be asked for five steel bridges to be built in connection with the River Aux Raisins drainage scheme in the townships of Osnabruck and Cornwall, Ont.

The Scully Steel & Iron Co., Chicago, has purchased a tract of ground at the southeast corner of Carroll avenue and Elizabeth street for $45,000. The property was acquired for the purpose of building a large steel warehouse, but the company's plans have not matured.

Gray & Dudley's new foundry in Northwest Nashville, between the Nashville, Chattanooga & St. Louis and the Tennessee Central railroads, is nearing completion, and a large force of men is laying the foundation for the warehouse adjoining. This will be one of the largest warehouses in Nashville. The side walls are about 300 feet in length.

The General Electric Co., at Schenectady, N. Y., will soon begin the erection of a large foundry at its plant. At present a lot of the molding has to be done outside the works, some of it being done in the Cohoes Iron Foundry and Machine shop and other places. When the new foundry is completed all the molding will be done at its own shops.

General Industrial Notes:—

The National Tube Co. has ordered for immediate installment complete heating equipment for the five new butt weld mills at Lorain from the American Blower Co., of Detroit.

It is stated that the Great Lakes Towing Co. will build no more wooden tugs, but will erect a ship yard for the construction of steel hulls at Chicago. Its present fleet of boats is nearly all of wood.

The plant of the Smith Improved Lock Nut Co., Rockford, Ill., is nearly ready for running and probably will be in operation within the next two weeks.

The National Tube Co. shipped its first train load of pipe since the resumption of the mills a number of weeks ago on Aug. 10. The shipment consisted of a consignment of 20 cars to a western city.

The plant of the Reading Foundry Co., consisting of ten acres and buildings, has been sold at sheriff's sale at Reading for $27,500. The new owner is Charles H. Schaeffer, of Reading.

The Brooks Locomotive Works, Buffalo, is building 25 switch engines of the heavy type for the Lake Shore railroad. Ten new passenger engines are also to be supplied by the same firm.

The Duluth & Iron Range Road is to lay 2,000 steel ties which it has just received from the Carnegie steel works. This will be something of the nature of an experiment and the ties will be laid in various places.

Mills Nos. 5, 6 and 7 of the Cambridge Sheet Steel Mills, Cambridge, O., resumed operation Aug. 14, to be followed shortly by the other mills which are still undergoing repairs.

The Dimmick Pipe Co., North Birmingham, Ala., is about to begin operations in the new addition to its plant. The addition practically doubles the capacity of the plant, and will permit the manufacture of the largest pipe.

The directors of the Ohio Traction Co. have voted to sell the Cincinnati Car Co. to the Car Builders Co., the new $60,000,000 combine, on recommendation of W. K. Schoepf, the president, if the combine is willing to carry out the provisions of its contract. The price was confidential.

The Tennessee Coal, Iron & Railroad Co. is engaged in the reopening of one of its ore mines at Green Spring, Ala. It has been found necessary to do this to meet the increasing demand of new furnaces built since the mine was abandoned in 1901.

The plant of the Ralston Steel Car Co., at Columbus, will probably begin operations this week, as all of the new machinery ordered is running. It is expected that manufacture of new work will commence before Oct. 1.

The Lackawanna Steel Co., Buffalo, N. Y., has begun the construction of a four-span steel bridge over the tracks of the Erie. The bridge will be 800 ft. long, will weigh 3,000 tons and will cost $250,000.

The Carnegie Steel Co. is filling at its Homestead plant an order for more than 1,000,000 lb. of boiler plate, the contract for which was awarded to the Carnegie Steel Co. by Harland & Wolfe, of Belfast, Ireland, who are build-

ing the Adriatic, a new steamer of the White Star line, to be a sister ship to the Cedric and Celtic.

The Hartwick Automatic Concrete Block Machine Co., manufacturers of all kinds of cement machinery, is in the market for a 16 in. to 18 in. lathe. The company contemplates building in the Spring, when it will need considerable additional machinery.

The works of the Fort Wayne Iron & Steel Co., Fort Wayne, Ind., after a long period of continuous running, have come to need repairs which will probably result in the board of directors ordering the closing of the mills for a short time.

A convention of trolley car makers is to be held the second week in September in Philadelphia. A number of concerns have already engaged hotel accommodations, among them the Westinghouse Electric Co., the General Electric Co., The National Air Brake Co. and others. Rumors of consolidation subsequent to the convention are in the air, but no authorative information has been given out.

The Northwest Stove Foundry, of Salem, Ore., is closed for a couple of months, during which time the building will be extensively repaired, including a new roof, cement floor and other improvements.

The North & Judd Mfg. Co., of New Britain, Conn., has been improving its plant by increasing the area of the windows and making other improvements which will render the work easier.

D. N. Clark, manufacturer of Clark's metallic filler, is changing the name of his company to the Shelton Metallic Filler Co., of Shelton, Conn. The object in changing the name is to avoid confusion which now arises from another company having a similar name.

Trade Notes:—

The Central Iron & Coal Co., has changed the location of its main office from Tuscaloosa, Ala., to Holt, Tuscaloosa, Co., Ala.

The Harrisburg Foundry & Machine Works, of Harrisburg, has taken the order for two four-valve Fleming engines of large horse-power for Mexico, and also for four large engines for the power plant of the new Knickerbocker hotel in New York.

The Union Iron Works, Spokane, Wash., has received from the city of Spokane, the contract for 1,500 tons of steel pipe for the new city water system. The cost of the pipe will be about $130,000.

The Ross Tacony Crucible Co., Tacony, Philadelphia, Pa., has erected a large office building and has just moved into it. A year ago this firm doubled its manufacturing capacity, forcing it to turn over its old office space for manufacturing purposes.

The Albany Foundry Co., Albany, N. Y., is in receipt of one of the largest foundry orders ever received in that section. A New York firm has placed an order for 3,000 gas ranges to be made at once. This will probably necessitate remodelling the plant.

The Merril-Stevens Co., Jacksonville, Fla., has received the contract for building eleven steel lighters for the Panama Canal commission. Work is to commence at once as the lighters are to be delivered in 115 days from the time the contract was let.

The Ohio Lock Nut & Bolt Co., Lancaster, O., at a meeting of its directors Aug. 10, elected the following officers: C. M. Rowlee, president; F. P. Barr, vice president; C. C. Flarida, secretary; C. T. Moore, treasurer, and J. S. Sites, attorney.

The Western Steel Gate Co. has removed its business from Two Rivers to Green Bay, Wis., and is occupying machinery shops already built in the latter place. The officers of the company are: C. W. Van De Walker, president; R. T. Jenney, general manager, and Cart W. Cate, treasurer.

The Morse Iron Works, Erie, Pa., will erect this season two steel frame buildings, 100 x 192 ft. and 100 x 120 ft., contracts for which have been let to the Bellefontaine Bridge & Iron Co., Bellefontaine, O. The company is most advantageously located, having 17 acres of land lying between the Lake Shore and Nickel Plate tracks which affords excellent switching facilities. The plant will be driven by gas engines using producer gas.

The change in the management of the American Skein & Foundry Co., Racine, Wis., was completed at a meeting of the directors and stockholders held at Hotel Racine, Aug. 15. The following officers were elected and will assume ther duties at once: President, W. F. Walker, of Chicago; secretary and general manager, Gilbert N. Prentiss of Racine; treasurer, M. C. Mitchell of Chicago.

Adrian Steel Casting Co., Adrian, Mich., manufacturer of crucible steel castings, has undergone a complete reorganization and has made large improvements about its plant. The election of officers recently resulted as follows: George B. M. Seager, president; S. S. Withington, vice president; B. M. Gardner, secretary, and E. N. Smith, treasurer.

The Crocker-Wheeler Co., Ampere, N. J., is in receipt of an order for a 200-K. V. A., three-phase, 60-cycle, engine-type, alternating current generator for the Ivorydale, Ohio, lighting and power plant of the Proctor & Gamble Co. This machine is a duplicate of the first Crocker-Wheeler alternator ever built, which was installed ten months ago in the Atlanta plant of the Proctor & Gamble Co. The high efficiency and excellent performance of the earlier machine led the purchaser to cancel an order for another type of generator and to order a duplicate of the first machine.

Trade Publications.

Crane Co., Chicago, is distributing circulars calling attention to its butterfly hot water radiator valves, and to its combination back-pressure and exhaust relief valves.

The Youngstown Steam Trap Co., Pittsburg, has issued a catalogue describing the steam trap manufactured by it. The traps are made in sizes from ¾ in. to 2 in.

The Emerson Electric Mfg. Co., St. Louis, has issued bulletin No. 3,105, describing its single phase induction motors of ⅛ and 1-6 horse power capacity.

The Hartwick Concrete Block Machine Co., Jackson, Mich., is distributing a neat folder advertising the concrete block machine made by it.

W. E. Caldwell Co., Inc., Louisville, Ky., has issued its 1905 catalogue describing the tanks and water towers made by it. A large amount of information regarding these articles is included in the catalogue.

The Burt Mfg. Co., Akron, Ohio, is distributing a catalogue describing various types of oil filters, and also the "Burt" and "Standard" exhaust heads. The catalogue contains about fifty pages and is well illustrated. In addition to other matter it contains a short discussion on the advantages of filtering oil.

Rogers, Brown & Co., of Cincinnati, Philadelphia, Cleveland, New York, Chicago and other cities, have brought out an attractive booklet which contains a vast amount of useful information relative to coke and pig iron. In addition to the coke and iron information there is included such matters as are usually found in a first-class pocket dairy.

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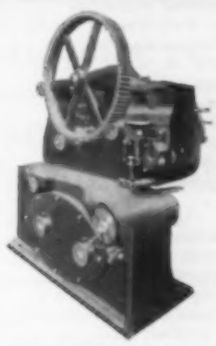

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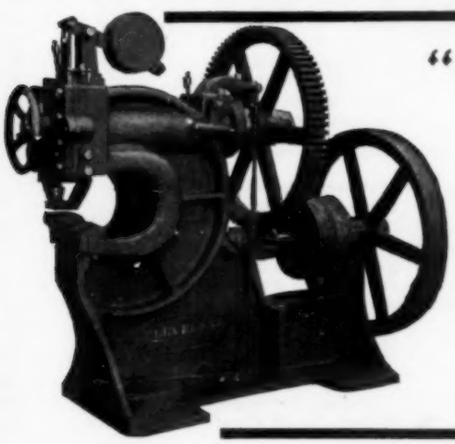

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Huber, S. V. & Co 91
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Ingersoll-Sergeant Drill Co 21
Interstate Engineering Co 86

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Kennedy, Walter 91
†Kidder, R. E —
†Knecht Bros. Co —
Koppel, Arthur 77

La Belle Iron Works 22
Laclede Fire Brick Mfg. Co 89
Ladd, James B 91
Lake Erie Engineering Works 75
Lamond, D., & Son 91
†Landis Tool Co —
*Lane Tool Co —
Laughlin, Alex., & Co 95
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Northern Engineering Works 85
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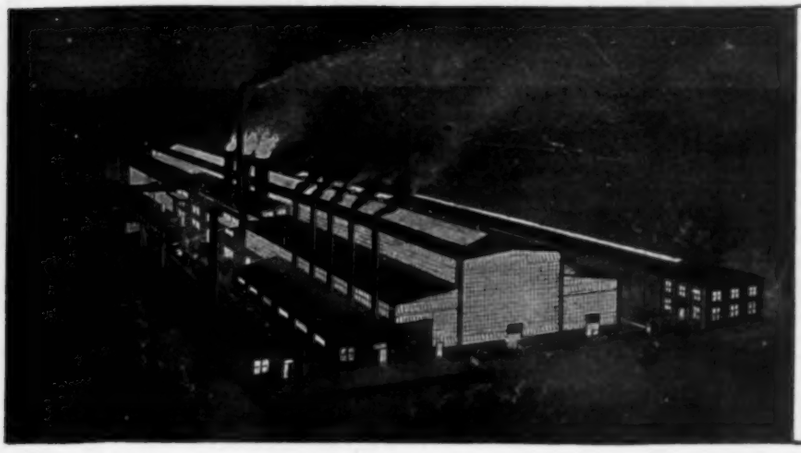

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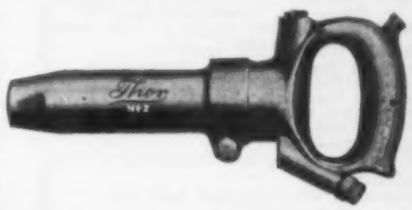

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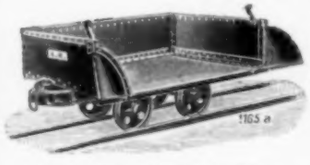

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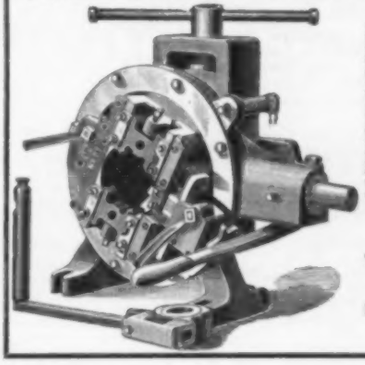

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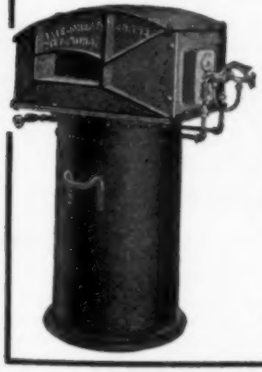

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Pawling & Harnischfeger, Milwaukee, Wis.
Craig Ridgway & Son, Coatesville, Pa.
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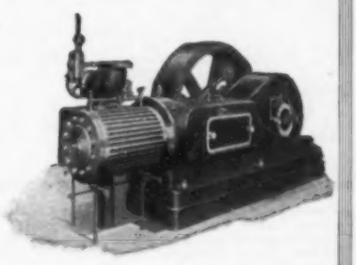

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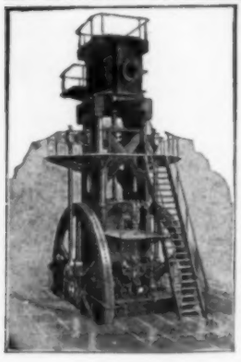

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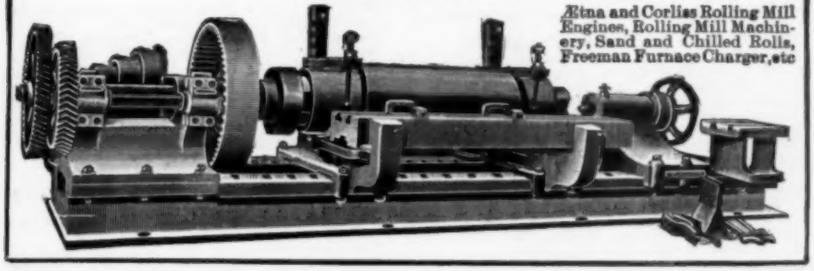

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Jeffrey Mfg. Co., Columbus, O.
Lidgerwood Mfg. Co., New York City.
Link-Belt Machinery Co., Chicago, Ill.
Marion Steam Shovel Co., Marion, O.
McLanahan-Stone Mach. Co., Hollidaysburg, Pa.
Thew Automatic Shovel Co., Lorain, O.
Vulcan Iron Works Co., Toledo, O.
The Wellman-Seaver-Morgan Co., Cleveland.

Molding Machines—
The Adams Co., Dubuque, Ia.
The S. Obermayer Co., Cincinnati and Chicago.
J. W. Paxson Co., Philadelphia, Pa.
Henry E. Pridmore, Chicago, Ill.
The J. D. Smith Fdy. Supply Co., Cleveland.
Tabor Mfg. Co., Philadelphia, Pa.
Taylor, Wilson & Co., Ltd., Allegheny, Pa.

Motors (Electric)—
Crocker-Wheeler Co., Ampere, N. J.

Nameplates—
Turner Brass Works, Chicago, Ill.

Oil Cabinets and Storage Systems—
S. F. Bowser & Co., Ft. Wayne, Ind.

Oil Tanks and Cars—
Girard Boiler & Mfg. Co., Girard, O.
The Meehan Boiler & Construction Co., Lowellville, O.
Niles Boiler Co., Niles, O.

Packing—
James Bonar & Co., Pittsburg, Pa.
Crane Co., Chicago, Ill.
Jenkins Bros., New York City.
The Whitman & Barnes Mfg. Co., Chicago, Ill.

Paint—
Jos. Dixon Crucible Co., Jersey City, N. J.

Patterns—
Balkwill Pattern Works, Cleveland, O.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Canton Foundry & Machine Co., Canton, O.
The Forsyth Pattern Co., Youngstown, O.
Gobeille Pattern Co., Cleveland, O.
R. E. Kidder, Worcester, Mass.
The Macbeth Iron Co., Cleveland, O.
The Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.
The Wellman-Seaver-Morgan Co., Cleveland, Ohio.

Pattern Letters—
Cleveland Galvanizing Works, Cleveland, O.
The S. Obermayer Co., Cincinnati and Chicago.
J. W. Paxson Co., Philadelphia, Pa.
The J. D. Smith Fdy. Supply Co., Cleveland.

Perforated Metals—
H. W. Caldwell & Son, Chicago, Ill.
Hendrick Mfg. Co., Carbondale, Pa.

Pig Iron—
Carnegie Steel Co., Pittsburg, Pa.
Reed F. Blair & Co., Pittsburg, Pa.
Bourne-Fuller Co., Cleveland, O.
Clinton Iron & Steel Co., Pittsburg, Pa.
Columbus Iron & Steel Co., Columbus, O.
Corrigan, McKinney & Co., Cleveland, O.
David Evans, Chicago, Ill.
Robt. Field Sales Agency, Cincinnati, O.
M. A. Hanna & Co., Cleveland, O.
Hickman, Williams & Co., Chicago, Ill.
LaBelle Iron Works, Steubenville, O.
Ernest Law & Co., Philadelphia, Pa.
J. Tattnall Lea & Co., Philadelphia, Pa.
McKeefrey & Co., Leetonia, O.
Pickands, Brown & Co., Chicago, Ill.
Pickands, Mather & Co., Cleveland, O.
Republic Iron & Steel Co., Chicago, Ill.
Richardson & Co., Pittsburg, Pa.
Rogers, Brown & Co., Cincinnati, O.
Scully Steel & Iron Co., Chicago, Ill.
Shenango Furnace Co., Pittsburg, Pa.
P. B. Stevens, Detroit, Mich.
Superior Charcoal Iron Co., Grand Rapids, Mich.
Thomas Furnace Co., Milwaukee, Wis.
L. & R. Wister Co., Philadelphia, Pa.

Pipe—
Bourne-Fuller Co., Cleveland, O.
Crane Co., Chicago, Ill.
Girard Boiler & Mfg. Co., Girard, O.
La Belle Iron Works, Steubenville, O.
The Meehan Boiler & Construction Co., Lowellville, O.
National Tube Co., Pittsburg, Pa.
Pittsburg Valve, Foundry & Construction Co., Pittsburg, Pa.
Scully Steel & Iron Co., Chicago, Ill.
United States Cast Iron Pipe & Fdy. Co., New York.

Pipe Covering—
Jenkins Bros., New York City.

Pipe Mill Machinery—
Standard Engineering Co., Ellwood City, Pa.
Taylor, Wilson & Co., Limited, Allegheny, Pa.
Union Foundry & Machine Co., Pittsburg, Pa.

Pipe Wrenches (Adjustable)—
The Whitman & Barnes Mfg. Co., Chicago, Ill.

Planers—
Baird Machinery Co., Pittsburg, Pa.
E. E. Bartlett, Boston, Mass.
Cleveland Punch & Shear Works Co., Cleveland, O.
The W. P. Davis Mach. Co., Rochester, N. Y.
J. J. McCabe, New York City.
Niles-Bement-Pond Co., New York.
Pratt & Whitney Co., Hartford, Conn.
Chas. G. Smith Co., Pittsburg, Pa.
Vandyck Churchill Co., New York City.
Whitcomb-Blaisdell Machine Tool Co., Worcester, Mass.

Pneumatic Tools—
Cleveland Pneumatic Tool Co., Cleveland, O.
Dayton Pneumatic Tool Co., Dayton, O.
General Pneumatic Tool Co., Montour Falls, N. Y.
Independent Pneumatic Tool Co., Chicago, Ill.
Ingersoll-Sergeant Drill Co., New York City.
Rand Drill Co., New York City.
Ryerson, Jos. T. & Son, Chicago.
Scully Steel & Iron Co., Chicago, Ill.

Pointing Machines (Wire)—
Farrel Foundry & Machine Co., Ansonia, Conn.
Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

Power Transmission Equipment—
Crocker-Wheeler Co., Ampere, N. J.

Presses—
Alliance Machine Co., Alliance, O.
Bertsch & Co., Cambridge City, Ind.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
E. W. Bliss Co., Brooklyn, N. Y.
Chambersburg Engineering Co., Chambersburg, Pa.
Chas. F. Elmes Eng. Works, Chicago, Ill.
Farrel Fdy. & Mach. Co., Ansonia, Conn.
Great Lakes Engineering Wks., Detroit, Mich.
Long & Allstatter Co., Hamilton, O.
Mackintosh, Hemphill & Co., Pittsburg, Pa.
Morgan Construction Co., Worcester, Mass.
Niles-Bement-Pond Co., New York.
Toledo Machine & Tool Co., Toledo, O.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
Watson-Stillman Co., New York City.
Williams, White & Co., Moline, Ill.
R. D. Wood & Co., New York City.

Pumps—
The American Well Works, Aurora, Ill.
James Bonar & Co., Incor., Pittsburg, Pa.
A. S. Cameron Steam Pump Works, New York.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
The Deming Co., Salem, O.
Dravo Doyle & Co., Pittsburg, Pa.
Farrel Foundry & Machine Co., Ansonia, Conn.
Great Lakes Engineering Wks., Detroit, Mich.
Ingersoll-Sergeant Drill Co., New York City.
F. M. Prescott Steam Pump Co., Milwaukee, Wis.
Southwark Foundry & Machine Co., Philadelphia, Pa.
The Wm. Tod Co., Youngstown, O.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
Watson, Stillman Co., New York City.
R. D. Wood & Co., Philadelphia, Pa.

Punches and Shears—
Alliance Machine Co., Alliance, O.
Bertsch & Co., Cambridge City, Ind.
Bignall-Keeler Mfg. Co., Edwardsville, Ill.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
E. W. Bliss Co., Brooklyn, N. Y.
Chambersburg Engineering Co., Chambersburg, Pa.
Cleveland Punch & Shear Wks. Co., Cleveland.
Farrel Foundry & Machine Co., Ansonia, Conn.
George A. Hogg Iron & Steel Fdy. Co., Pittsburg, Pa.
Long & Allstatter Co., Hamilton, O.
Mackintosh, Hemphill & Co., Pittsburg, Pa.
National Machinery Co., Tiffin, O.
R. S. Newbold & Son Co., Norristown, Pa.
Niles-Bement-Pond Co., New York.
Jos. T. Ryerson & Son, Chicago, Ill.
Scully Steel & Iron Co., Chicago, Ill.
Toledo Machine & Tool Co., Toledo, O.
United Engineering & Fdy. Co., Pittsburg, Pa.
Vandyck Churchill Co., New York City.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
Watson-Stillman Co., New York City.
Williams, White & Co., Moline, Ill.
R. D. Wood & Co., Philadelphia, Pa.

Punch Tools—
Blomfeldt & Rapp, Chicago, Ill.
Pratt & Whitney Co., Hartford, Conn.

Pyrometers—
Edward Brown, Philadelphia, Pa.
Charles Englehard, New York City.
S. H. Stupakoff, E. E., Pittsburg, Pa.
Uehling-Decker Co., Passaic, N. J.

Rails—
The Atlas Car & Mfg. Co., Cleveland, O.
Bourne-Fuller Co., Cleveland, O.
Carnegie Steel Co., Pittsburg, Pa.
The Cleveland Car Co., West Park, O.
A. G. Hathaway & Co., Cleveland, O.
Hyde Bros. & Co., Pittsburg, Pa.
Arthur Koppel, New York City.
Ernest Law & Co., Philadelphia, Pa.
Richardson & Co., Pittsburg, Pa.
Scully Steel & Iron Co., Chicago, Ill.

Rammers—
The S. Obermayer Co., Cincinnati and Chicago.
J. W. Paxson Co., Philadelphia, Pa.
The J. D. Smith Fdy. Supply Co., Cleveland.

Rapping Plates—
The S. Obermayer Co., Cincinnati and Chicago.
J. W. Paxson Co., Philadelphia, Pa.
The J. D. Smith Fdy. Supply Co., Cleveland.

Ratchet Drills (Universal)—
Armstrong Bros. Tool Co., Chicago, Ill.
Pratt & Whitney Co., Hartford, Conn.

Reamers—
The Cleveland Twist Drill Co., Cleveland, O.
Pratt & Whitney Co., Hartford, Conn.
The Whitman & Barnes Mfg. Co., Chicago, Ill.

Reversing Controllers—
The Electric Controller & Supply Co., Cleveland, O.
Alliance Machine Co., Alliance, O.
John F. Allen, New York City.
Chambersburg Engineering Co., Chambersburg, Pa.
General Pneumatic Tool Co., Montour Falls, N. Y.

Rivet Making Machinery—
National Machinery Co., Tiffin, O.

Rivets—
American Iron & Steel Mfg. Co., Lebanon, Pa.
Bourne-Fuller Co., Cleveland, O.
Garland Nut & Rivet Co., Pittsburg, Pa.
Arthur C. Harvey & Co., Boston, Mass.
A. G. Hathaway & Co., Cleveland, O.
Lockhart Iron & Steel Co., Pittsburg, Pa.
Joseph T. Ryerson & Son, Chicago, New York and Pittsburg.
Scully Steel & Iron Co., Chicago, Ill.

Riveting Machines—
John F. Allen, New York City.
Alliance Machine Co., Alliance, O.
Chambersburg Engineering Co., Chambersburg, Pa.
The Cleveland Machine & Mfg. Co., Cleveland, O.
Cleveland Pneumatic Tool Co., Cleveland, O.
Cleveland Punch & Shear Wks. Co., Cleveland.
General Pneumatic Tool Co., Montour Falls, N. Y.
Hanna Engineering Works, Chicago, Ill.
Ingersoll-Sergeant Drill Co., New York City.
Niles-Bement-Pond Co., New York.
Rand Drill Co., New York City.
Joseph T. Ryerson & Son, Chicago, New York and Pittsburg.
Scully Steel & Iron Co., Chicago, Ill.
Watson-Stillman Co., New York City.
R. D. Wood & Co., Philadelphia, Pa.

Rock Drills—
Ingersoll-Sergeant Drill Co., New York City.
Jeffrey Mfg. Co., Columbus, O.
Rand Drill Co., New York City.

Rolls (Sand Chilled and Steel)—
Farrel Fdy. & Mach. Co., Ansonia, Conn.
George A. Hogg Iron & Steel Foundry Co., Pittsburg, Pa.
Mesta Machine Co., Pittsburg, Pa.
Seaman, Sleeth Co., Pittsburg, Pa.
United Engineering & Fdy. Co., Pittsburg, Pa.
The Wm. Tod Co., Youngstown, O.
Wheeling Mold & Fdy. Co., Wheeling, W. Va.

Rolling Mill Machinery—
Alliance Machine Co., Alliance, O.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
The Cleveland Machine & Mfg. Co., Cleveland, O.
Farrel Fdy. & Machine Co., Ansonia, Conn.
Fischer Fdy. & Mfg. Co., Pittsburg, Pa.
Girard Boiler & Mfg. Co., Girard, O.
George A. Hogg Iron & Steel Foundry Co., Pittsburg, Pa.
Macbeth Iron Co., Cleveland, O.
Mackintosh, Hemphill & Co., Pittsburg, Pa.
Mesta Machine Co., Pittsburg, Pa.
Morgan Construction Co., Worcester, Mass.
Niles-Bement-Pond Co., New York.
R. S. Newbold & Son Co., Norristown, Pa.